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What Drives You? A Dynamic Analysis of Motivation in Different Stages of Goal Pursuit

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What Drives You? A Dynamic Analysis of Motivation in Different Stages of Goal Pursuit

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Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

May 2013

Dedication

To my father, who has always been my role model, my mentor, my best friend, and gave me the strength to persist through the storms in life. To my mother, who nurtured me as I went through my school years, never gave up on me, and was always there to provide love and guidance. To my brother, kowei, whose dedication and passion for his dreams inspired me to strive harder. And to my husband, Brant, who has stood by me through ups and downs, and has always believed in me.

Acknowledgements

I would like to acknowledge the support of a number of individuals who devoted their time and effort to make me a scholar. My deepest gratitude goes to my dissertation advisors, Ying Zhang and Susan M. Broniarczyk. Thank you for believing in me and taking me into the world of academia. I am fortunate to have you as my parents in the field from day one, and I know that I would never be here without your love, support, dedication and guidance.

I would also like to acknowledge the support and guidance of my committee members: Julie R. Irwin, Raj Raghunathan, and Arthur B. Markman. Julie, you taught me how to be a creative thinker while keeping the integrity of methodology. Raj, you are a wonderful mentor and a great friend, who knows how to push the boundaries and remain balanced between work and play. Art, thank you for having me in your class and weekly lab meetings; you provided intellectual challenges and warm support when I needed it the most.

Thank you to the wonderful colleagues in the Marketing Department, especially to Leigh McAlister, Raji Srinivasan, Andy Gershoff, Frankel Hofstede, Jason Duan, Jade Dekinder, Ty Henderson, Garrett Sonnier, Raghunath Rao, Morgan Ward, Nita Umashankar, Sunaina Chugani, Jae-Eun Namkoong, and Joon Ro. You have inspired me to better my work, facilitated my research in every way possible, and continued to be my friends despite my stressed-out poker face at times. I cannot imagine going through the past six years of my life without you.

What Drives You? A Dynamic Analysis of Motivation in Different Stages of Goal Pursuit

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The University of Texas at Austin, 2013

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While a substantial body of research has documented how consumers' levels of progress, in general, influence their motivation in goal pursuit, the changes in the determinants of motivation in different stages of goal pursuit and their impact on consumers' self-regulation remain largely unexplored. Specifically, what are the factors consumers focus on when they first start to pursue a goal versus when they are approaching the end point of the pursuit? My dissertation explores this important question from three different angles: the perceived velocity, the mental representation of progress level, and the perceived closeness with others who are pursuing the same goal.

Through three essays, we found that when people first begin to pursue a goal and the attainability of the goal is a concern, they are motivated by a fast speed of progressing, tend to exaggerate the progress they have made so far, and seek companionship from others who are pursuing the same goal, to enhance the belief that the goal is indeed attainable. However, once they reach the advanced stage of the pursuit and the attainability of the goal is relatively secured, they switch to focus on the remaining discrepancy and seek to reduce this gap in a timely manner; therefore, in this advanced stage of the pursuit they are conversely motivated by a slow speed of progressing, tend to

downplay the progress they have made to exaggerate the remaining discrepancy that still needs to be completed, and such intense progress monitoring also leads to competitiveness against others who are pursuing the same goal as them.

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INTRODUCTION

For a person who is trying to pay off his debts and has just started working on this goal, telling him that he is paying off debts at a fast speed can boost his confidence and motivate him to allocate more money towards debt repayment; however, after paying off the majority of his debts and getting close to his financial goal, this person may be tempted to reduce his debt repayment allotments if he continues to receive the same feedback that he is paying off his debts at a fast speed, and infer that there is no need to invest as much effort as before. That is, the same factor that motivates consumers in early stages of the pursuit may conversely de-motivate them when they are approaching the end point.

While a large body of research has documented how consumers' levels of progress, in general, influence their motivation in goal pursuit (e.g., Kivetz, Urminsky, and Zheng 2006; Liberman and Förster 2008), little research has asked the question of how different factors change their motivational impact as people accumulate progress throughout the course of goal pursuit. Specifically, what factors do people focus on when they first start to pursue a goal, and what factors are motivating when they approach the end point of the pursuit? To answer this question, we draw from the literature of the dynamics of self-regulation that proposed two different sources of motivation: one's commitment to the goal and the lack of progress on the goal (Fishbach, Zhang, & Koo, 2009; Koo & Fishbach, 2008). Because it is unlikely that individuals would be concerned about both goal commitment and the lack of progress to the same extent at all times, we

propose that the dominant concern people have about goal pursuit would depend on the stage they are in.

Specifically, when people first start to pursue a goal, they are less certain about their commitment to the goal and will question whether they should continue to work toward goal attainment; hence, their commitment level would be the main source of motivation at this early stage. In addition, because goal commitment represents a person's definitive decision to pursue a goal with the expectation of eventually attaining it, the commitment to a goal should be contingent on the perception that the goal is attainable. For example, both the value-expectancy models (e.g., Atkinson 1957; Tolman 1955; Vroom 1964) and goal-setting theory (Locke and Latham 1990) emphasize that the cognitive assessment of one's chances of attaining a goal is an important factor in people's decisions to adopt this goal. Therefore, whenever consumers are uncertain about the attainability of a goal, such as when their progress level is still low, they focus on the question of goal attainability and seek information to confirm that they can indeed attain the goal. Their motivation in this stage, therefore, should depend on their answer to the question of goal attainability.

The concern over goal attainability, however, is unlikely to dominate for long. Once consumers accumulate sufficient progress toward the goal and are reaching the advanced stage of the pursuit, they feel relatively more confident that they can attain the goal (Wood and Bandura 1989). With this certainty in mind, consumers shift their focus to whether they are reducing the remaining discrepancy effectively, and it is the remaining discrepancy (i.e., lack of progress) that drives their motivation in this advanced

stage of goal pursuit. That is, when people feel that their effort is not effective in reducing the remaining discrepancy, they would be motivated to increase their effort to ensure that the goal can be successfully attained within the desired timeframe (e.g., Brunstein and Gollwitzer 1996; Carver and Scheier 1998; Wicklund and Gollwitzer 1982). Therefore, whenever consumers are focusing on reducing the remaining discrepancy effectively, such as when they have reached the advanced stage of goal pursuit, they would focus in turn on the question of discrepancy reduction, and allocate effort based on how much is required to reduce the remaining discrepancy to reach the end point of the pursuit.

Because of this shift from focusing on goal attainability in the early stage, and conversely focusing on discrepancy reduction in the advanced stage of goal pursuit, the same factor would have a completely different impact on consumers' motivation, depending on the stage they are in and their dominant concern at the moment. Based on this framework, I have developed three essays to explore the dynamic impact of perceived velocity, mental representation of progress, and social interactions, respectively.

In the first section, "Motivational Consequences of Perceived Velocity in Consumer Goal Pursuit (pp. 1 – 35)," we explore the factor of perceived velocity, i.e., the rate of progress, in initial versus advanced stages of goal pursuit. We propose that when progress toward attaining a goal is low, a high (vs. a low) perceived velocity in attainment suggests higher goal attainability, resulting in greater motivation. However, when consumers are approaching the end point, they focus more on whether they are effectively reducing the remaining discrepancy to attain the goal quickly. In this case, a

low (vs. a high) perceived velocity of progress elicits greater motivation; because, it suggests that continued effort is needed to ensure a more expeditious attainment.

In one of the studies, we collaborated with a coffee shop on campus and launched a loyalty program to motivate repeated coffee purchases. We found that a point structure that allowed customers to accumulate loyalty points faster when they first started the program, and conversely allowed them to accumulate points slower when they were approaching the total points required for the reward was more motivating than the standard loyalty program that allowed customers to accumulate points at a uniform speed. This finding is not only counter-intuitive, but also has important implications for real-world business practices.

In the second section, "So Near and Yet So Far: The Mental Representation of Goal Progress (pp. 36 – 88)," we investigate how people mentally represent their progress level in initial versus advanced stages of goal pursuit. We propose that the mental representation of progress level serves as a self-regulatory mechanism to ensure goal attainment: Specifically, when individuals just start the pursuit, they exaggerate their progress level to signal higher goal attainability and elicit greater effort; in contrast, when people are approaching the end point, they downplay their progress to create greater perceived discrepancy, and thus elicit greater effort.

In one of the studies, we organized a t-shirt donation campaign, in which we invited students to donate their used t-shirts to help us reach the goal of collecting 1,000 t-shirts for the refugees in Haiti. We manipulated the importance of the goal by changing the cause for the campaign. In addition, we showed participants a picture of either two

(initial stage) or ten (advanced stage) full boxes of used t-shirts – presumably the donations we have taken so far for the campaign. We found that when the cause of donation was deemed more important (vs. less important), people exaggerated the number of used t-shirts in the picture to signal higher goal attainability when there were only two full boxes, but downplayed the number of used t-shirts when they saw ten boxes of t-shirts; this alternation of how people mentally represented the progress level of the campaign, interestingly, led to greater motivation – more t-shirts students donated to help ensure the attainment of this collective goal.

In the third section, "Friend or Foe? The Dynamics of Interpersonal Relationships in Goal Pursuit (pp. 89 – 152)," we explore the factor of social interactions in initial versus advanced stages of goal pursuit. We propose that when people first start pursuing a goal, they are more likely to treat others pursuing the same goal as "friends," to seek companionship from them and thus enhance the perceived attainability of the goal. However, when people approach the end point of the pursuit, they begin to monitor their progress more intensely, and thus conversely treat others pursuing the same goal as "foes," and seek to win the alleged "competition" by attaining the goal sooner than others. Such shift of closeness is also manifested through people's information-sharing behaviors.

In one of the studies, we tracked how students' perceived closeness with others who were pursuing the same academic goals as them evolved throughout the semester. We found that students drew their same-pursuit peers closer when they were in the early stage of their academic goal pursuit, but began to distance these same-pursuit peers as

they got closer to the end-point of the semester. Such shift of closeness from being friends to becoming foes was unique among the group of same-pursuit peers and did not manifest in other types of interpersonal relationships, such as how students treated their significant others, or friends who were pursuing different academic goals. This research shed important light on the "black box" of social interaction in goal pursuit processes, and has important real-world implications for organizations and government institutions that aim to implement infrastructures to facilitate cooperative behaviors among people who are pursuing the same, important goals in their lives.

SECTION 1: MOTIVATIONAL CONSEQUENCES OF PERCEIVED VELOCITY IN CONSUMER GOAL PURSUIT

Introduction

Consumers often actively monitor their progress in goal pursuit, and these processes generate two pieces of distinctive information: On the one hand, they signal one's relative position in the pursuit—that is, their level of progress toward goal attainment. On the other hand, they also provide information on the rate of progress, telling consumers how fast they are moving toward the end point.

While abundant literature has investigated how the level of progress may affect individuals' motivation in goal pursuit (e.g., Hull 1932; Liberman and Förster 2008), relatively less research has explored how the *rate* of progress may influence motivation. For example, how does information about their rate of stamp collection influence the purchase decisions of consumers who are trying to accumulate enough stamps for a free coffee in a loyalty program? Similarly, should companies that try to encourage repeated use of products allow consumers to experience a fast or a slow rate of progress toward desirable end states, such as beauty and health? We also ask whether the impact of perceived velocity in progressing remains the same throughout the entire course of goal pursuit, or whether it changes as people move from one stage to another.

To address these questions, we build on the research of dynamics of self-regulation (Fishbach, Zhang, and Koo 2009; Koo and Fishbach 2008) and propose that

knowledge of the velocity rate (high vs. low) in progressing toward a goal can either increase or decrease consumers' motivation in goal pursuit, depending on their achieved level of progress toward goal attainment. Specifically, when consumers have just started pursuing a goal and their level of progress is low, they focus primarily on whether they can attain the goal and ask the question, "*Can* I get there?" A high (vs. a low) velocity in progressing suggests a greater chance of eventual goal attainment, which therefore leads to greater motivation in goal pursuit. However, when consumers have achieved sufficient progress toward the goal and are relatively certain about its attainability, they shift their focus to the temporal aspect of goal attainment and become more concerned about the question, "*When* will I get there?" At this stage, a low (vs. a high) velocity in progressing should elicit greater motivation because it suggests that the current effort in reducing the remaining discrepancy is relatively ineffective and that more effort is necessary to ensure a speedy goal attainment.

Chapter 1: Literature Review

PROGRESS AND VELOCITY

A large body of research has documented how consumers' levels of progress influence their motivation in goal pursuit, and the overarching finding is that as people move closer to the attainment of the goal, their motivation increases (e.g., Kivetz, Urminsky, and Zheng 2006; Liberman and Förster 2008). However, because movement toward goal attainment is a dynamic process that involves both a temporal and a distance aspect, trying to understand the motivational consequences of progress by focusing on the level of progress alone neglects the temporal aspect of the movement and misses out on the influence of the rate of progress, a psychological equivalent of velocity (Carver, Lawrence, and Scheier 1996). In contrast with the level of progress—a relatively static concept that reflects one's past achievement—the velocity in progressing provides dynamic feedback on the effectiveness of one's efforts in goal pursuit. For example, consider a person who monitors his or her weight loss: while the total weight that has been lost indicates the level of progress, equally important is how fast this person has been able to make this progress.

Research in control theories has long suggested that self-regulation is governed by a negative feedback loop. In particular, Carver and Scheier (1998) proposed that for each action system that provides feedback on the remaining discrepancy to goal attainment, there also exists a rate system that deals with the rate of progress. On the basis of this theory, monitoring the rate of progress operates by comparing the perceived velocity to a

reference value and generates both affective and expectancy-related outcomes. On the affective side, the main findings suggest that moving slowly toward a goal induces negative affect, which leads to greater efforts to accelerate the pursuit (Cervone et al. 1994; Gollwitzer and Rohloff 1999). Moving quickly toward a goal, on the other hand, induces positive affect and hence decreases the effort (Carver and Scheier 1998). In addition, related research has explored specific types of affect and has demonstrated that a high (vs. a low) velocity can both increase or decrease effort, depending on the type of goals people are pursuing (Holman, Totterdell, and Rogelberg 2005). More recently, in multiple goal context, Louro, Pieters, and Zeelenberg (2007) found that positive and negative affect can both increase motivation, depending on the attribution of such affective experiences (see also, Fishbach and Labroo 2007).

In contrast with the extensive research on how affective consequences of velocity can influence motivation, little research has examined the informational value of velocity in influencing motivation. In particular, we are interested in how people may interpret their velocity in progressing differently to address their primary concerns—such as whether and when the goal can be attained—at different stages of goal pursuit. We suggest that because consumers focus on different questions at the initial versus the advanced stage of goal pursuit, they interpret the same information on velocity differently to address these concerns. As a result, the same velocity information may have opposite impact on consumers' motivation.

"CAN I GET THERE?" – MOTIVATION FROM ATTAINABILITY

Research on the dynamics of self-regulation has proposed that when one's commitment to a goal is uncertain or low, focusing on the progress that one has achieved will signal his or her commitment to the goal and motivate further pursuit (Koo and Fishbach 2008). What, however, determines consumers' commitment to a goal, and what information is more motivating in establishing goal commitment? We propose that because goal commitment represents a person's definitive decision to pursue a goal with the expectation of eventually attaining it, the commitment to a goal should be first contingent on the perception that the goal is attainable. For example, the social-cognitive model (e.g., Bandura 1997) suggests that a person's willingness to pursue a goal increases as a function of the belief that the goal can be attained through effort. Similarly, both the value-expectancy models (e.g., Atkinson 1957; Tolman 1955; Vroom 1964) and goal-setting theory (Locke and Latham 1990) emphasize that the cognitive assessment of one's chances of attaining a goal is an important factor in people's decisions to adopt this goal. More recently, Zhang and Huang (2010) added to this literature by suggesting that in early stages of goal pursuit, people derive motivation primarily from the belief that the goal is attainable. Therefore, whenever consumers are uncertain about the attainability of a goal, such as when their progress level is still low, they focus on the question, "Can I get there?" and seek information to confirm that they can indeed attain the goal. Their commitment and, in turn, motivation, should then depend on their answer to this question.

As compared with a low velocity in progressing, a high velocity suggests that one is moving toward the ideal state relatively fast, which thus confirms that the attainment of the goal is likely, despite the relatively low levels of progress at the moment. For instance, for customers who have just started accumulating reward points in a loyalty program, knowing that they are accumulating points at a fast (vs. a slow) rate confirms that they can eventually reach the redemption point for the prize. Therefore, these customers should be more likely to commit to this goal and show higher motivation for further pursuit, despite their current low progress. In contrast, those who experience a low velocity in progressing are likely to infer that the goal is beyond their reach and will thus disengage from this program.

"When Will I Get There?"— Motivation from Slow Movement

The question of "Can I get there?", however, is unlikely to dominate for long. Once consumers accumulate sufficient progress toward the goal, they feel relatively more confident that they can attain it and are more committed to its pursuit (Wood and Bandura 1989). With this certainty in mind, consumers shift their focus to whether they are reducing the remaining discrepancy at an acceptable speed and ask the question, "When will I get there?" For instance, a customer who is approaching the redemption point on a loyalty program is unlikely to be concerned about whether the end point is reachable, but will focus instead on how much longer it will take him or her to collect the additional points needed for the reward.

In the models that emphasize the discrepancy reduction aspect in self-regulation (e.g., Carver and Scheier 1998; Locke and Latham 1990), the rate of progress signals the effectiveness of goal pursuit because it determines the amount of time it takes to reach the end point. Ineffective goal pursuit, once experienced, motivates people to correct their behaviors to ensure that the goal can be successfully attained within the desired timeframe (e.g., Brunstein and Gollwitzer 1996; Wicklund and Gollwitzer 1982). Therefore, when people focus on, "When will I get there?", they interpret the velocity information as signaling how effective they have been in reducing the remaining discrepancy and adjust their behaviors accordingly.

As compared with a high velocity, which suggests to people that they are making steady progress and that goal attainment is timely, a low velocity signals that their efforts in reducing the remaining discrepancy are relatively ineffective, and that reaching the end point (although certainly possible) might be delayed. At these times, consumers should be motivated to invest more effort to ensure that the goal can be attained within the desired timeframe. For example, for a dieter who is approaching his or her ideal weight and thus is relatively certain about its attainability, knowing that weight is being lost slowly (vs. quickly) will suggest that he or she should try harder so that the ideal weight can be attained sooner, hence eliciting greater effort.

In sum, central to our hypothesis are the different inferences that people make on the basis of the same velocity information, depending on their primary concerns. In the present model, consumers question whether they can attain the goal initially, but once they are relatively certain about its attainability, they begin to question how soon they can

attain it. Therefore, the same information on velocity can have opposite motivational consequences, depending on which question is being asked: When the low levels of progress highlight the uncertainty in goal attainability, consumers interpret the velocity to answer the question, "Can I get there?" and are motivated more by a high velocity because it suggests higher goal attainability. However, when sufficient progress on the goal assures its attainability, consumers interpret the velocity to answer the question, "When will I get there?" and, consequently, are more motivated by low velocity because it suggests the need for extra effort to ensure a speedy goal attainment.

We tested the present hypothesis in five studies. We began with a field study (Study 1) in which we investigated the proposed hypothesis in the context of contributing to a charity goal. In Study 2, we directly assessed people's concerns ("Can I get there?" vs. "When will I get there?") at different stages of goal pursuit and explored how they impact motivation. In Study 3 and Study 4, we tested whether certainty about goal attainment was the mechanism underlying the shifting concerns by manipulating the point when people can be relative assured of the goal's attainability: we either delayed (Study 3) or moved up (Study 4) when people could be certain that the goal is attainable, and examined how motivation is influenced by different velocity information. In Study 5, we returned to another field experiment and tested the validity of our hypothesis in the context of a customer loyalty program.

Chapter 2: Study 1 – Volunteering

We begin our investigation in a group goal context. Prior research suggests that when individuals identify themselves with a certain group, they adopt the group goal as their own and contribute to the shared goal as long as it is meaningful (Karau and Williams 1997; Wann and Branscombe 1993). Because people seek the same information in the pursuit of group goals as they do in individual goals (Koo and Fishbach 2008), we were able to test our hypothesis in a group goal context and teamed up with Relief Nursery—a nationally recognized nonprofit organization dedicated to preventing child abuse—to solicit volunteers for the organization.

METHOD

Participants in this study included 132 individuals (63 females, 64 males, 5 unidentified) who were approached on the campus of a large southwestern university. This field experiment used a 2 (progress level: low vs. high) × 2 (velocity: low vs. high) between-subjects design.

Two experimenters distributed campaign letters on campus. The experimenters approached participants in public areas, briefly introduced themselves as representatives for Relief Nursery, and explained the mission of the organization. They also explained that they were running a campaign to recruit volunteers for the organization and passed out a campaign letter from Relief Nursery, along with a one-page sign-up sheet.

The letter from Relief Nursery described a child abuse case and provided a picture of a victim of such a case. Following this description, the letter explained the mission of

the organization and described its current recruiting campaign. Specifically, the letter explained that to effectively implement the early-intervention programs that prevent child abuse, the local office of the organization would need 1,200 volunteer hours for the next 6 to 9 months. The letter further explained potential tasks for volunteers and emphasized that the organization would ensure a proper match between their volunteers' expertise and the assigned activities.

The letter then presented the current situation of the campaign and indicated that they were either 200 hours away (high progress) or 800 hours away (low progress) from reaching the campaign goal of 1,200 volunteer hours. The letter also stated that, on the basis of the progress made over the past few weeks, the sign-up rate had been either relatively slow, at around 10 committed hours per week (low velocity), or relatively fast, at around 10 committed hours per day (high velocity).

Participants were then urged to volunteer for the organization and were given a sign-up form. They were first asked whether they would like to volunteer for Relief Nursery. Those who indicated "no" were thanked and dismissed. Those who indicated "yes" provided their personal information and contact details. More importantly, they also indicated the number of total hours they were willing to commit to volunteering for Relief Nursery in the next 9 months. After they completed the sheet, participants were thanked and assured that the organizer of the program would get in touch with them to arrange the assignments.

RESULTS AND DISCUSSION

Among all of the participants we approached, 54.5% committed to volunteer for Relief Nursery, generating a total of 845 volunteer hours for the campaign. The volunteers' information was passed on to Relief Nursery for utilization in upcoming activities.

Participants' motivation to help the campaign was measured by their willingness to volunteer. We first analyzed the percentage of approached individuals who committed to help. A logistic regression of individuals' decisions on whether to volunteer on the level of progress, the velocity in goal attainment, and the interaction between them yielded the predicted Progress Level × Velocity interaction, $\beta = -3.81$, Wald's χ^2 $(1, N = 132) = 23.26$, $p < .01$. When progress on attaining the campaign goal was low, 78.8% of the people in the high velocity condition committed to help, as compared with 40.0% in the low velocity condition, χ^2 $(1, N = 63) = 9.88$, $p < .01$. In contrast, when the progress on the campaign goal was high, 75.0% of approached individuals in the low velocity condition committed to help, as compared with 27.0% in the high velocity condition, χ^2 $(1, N = 69) = 15.80$, $p < .01$ (see Figure 1).

Also of interest to us was the number of hours people committed to volunteering for Relief Nursery. An ANOVA of this variable yielded a significant Progress Level × Velocity interaction, $F(1, 128) = 7.77$, $p < .01$, and no main effects. When progress on attaining the campaign goal was low, people who were told that the sign-up rate was fast committed more hours ($M = 10.36$ hr) than did those who were told that the sign-up rate was slow ($M = 5.13$ hr), $t(61) = -1.88$, $p < .06$. Conversely, when progress on attaining

the campaign goal was high, people who were told that the sign-up rate was slow committed more hours (M = 7.06 hr) than did those who were told that the sign-up rate was fast (M = 3.32 hr), $t(67) = 2.17$, $p < .05$ (see Figure 2).

The results of Study 1 provided initial support for our hypothesis in a public charity goal context by showing that while a high (vs. a low) velocity in progressing motivated more effort when the overall progress level on attaining the goal was low, a low (vs. a high) velocity became more motivating when the progress level was relatively high. According to our theorizing, this occurred because people shifted their focus from "Can I get there?" to "When will I get there?" as they progressed toward the end point. In our next study, we tested this mechanism directly.

Chapter 3: Study 2 – Sensory Task

In Study 2, we manipulated participants' levels of progress and their perceived velocity in a target identification task before measuring their underlying inferences as well as their persistence in waiting for a bonus question under extreme noise.

METHOD

A total of 159 undergraduates (79 females, 80 males) at a large southwestern university participated in this study for partial course credit. This study used a 2 (progress level: low vs. high) × 2 (velocity: low vs. high) between-subjects design.

The cover story told participants that their task was to identify ambiguous visual and audio stimuli presented in the task. Points would be awarded for correct answers, and those who reached 900 total points in the task would receive a limited-edition school keychain as reward.

In explaining the setup of the experiment, we told participants that there were two types of targets in the task: visual and audio. For the visual questions, they would need to decipher strings of letters in ambiguous fonts, and the awarded points depended on how close their answers were to the correct ones. For audio questions, they would need to identify the ambiguous sound played in their headphones. We also displayed a dynamic progress bar with the end point of 900 to provide real-time feedback on participants' point accumulation.

In the first visual section of questions, participants deciphered five ambiguous letter strings. By the end of the section, participants in high progress conditions had

gained 600 points, whereas those in low progress conditions had collected 300 points. Because participants did not know the total number of questions in the task, they were unable to infer their relative performance by simply looking at the number of points they had achieved, allowing us to manipulate perceived velocity through social comparison. A performance analysis page after these questions informed participants in high velocity conditions that "based on the questions you have completed, you are gaining points at a FASTER rate than the majority of all participants in our database." In contrast, those in low velocity conditions were told that they were gaining points at a slower rate than the majority of participants in the database.

After receiving this information, participants clicked "Continue" and were greeted by an "optional audio question." Participants were told that the optional audio question was worth 100 points, but that they would have to wait for their turn because of technical restrictions. Participants were then asked to put on their headphones and wait for this audio question, or to click "Continue" to quit waiting at any time. During the wait time, noisy "music" was played through participants' headphones. We measured the amount of time that participants persisted in waiting for the optional question as an indicator of their motivation for getting the bonus.

In Study 2, we also tested the mechanism through which the perceived velocity affected motivation. Under the cover story of getting feedback on the design of the experiments, we told participants that they would occasionally run into questions related to the design rather than to the content of the experiment in pop-up boxes during the task. A box showed up right after participants received the feedback on velocity (but before the

optional question). In this box, we included a question that examined the extent to which participants were concerned about goal attainability ("How likely do you think it is that you will reach 900 points for the keychain?") and another one about when they would reach the end point ("How soon do you think you will reach 900 points for the keychain?"). Both items were measured on 7-point scales. We also included questions for potential alternative mechanisms, such as goal value and importance (e.g., "How much are you willing to pay for the limited-edition school keychain?" and "How important is it for you to reach 900 points for the school keychain?"), and mood states.

After answering these questions, participants returned to the main task. All participants reached 900 points in the end and received the keychain or cash equivalent.

RESULTS AND DISCUSSION

All participants quit waiting for the bonus question eventually, allowing us to use the amount of time they persisted as a measure of their motivation. An ANOVA of the wait time (in seconds) yielded the hypothesized Progress Level × Velocity interaction, $F(1, 155) = 10.04$, $p < .01$. No other effects emerged in this analysis. Among participants who had made only low progress on the goal, those who thought they were progressing quickly persisted longer under the noise (M = 114.92 s) than did those who thought they were progressing slowly (M = 72.24 s), $t(73) = -2.37$, $p < .05$. In contrast, among the participants who had made high levels of progress, those who learned that they were progressing slowly persisted more (M = 98.52 s) than those who thought they were progressing relatively fast (M = 67.56 s), $t(82) = 2.07$, $p < .05$ (see Figure 3).

We further analyzed the concerns that people had at different stages of goal pursuit. An ANOVA of the perceived attainability of the goal ("Can I get there?") yielded a main effect of progress level, $F(1, 155) = 5.04$, $p < .05$, and a main effect of velocity, $F(1, 155) = 23.28$, $p < .01$. In addition, an ANOVA of how soon participants thought they would reach the goal ("When will I get there?") also yielded a main effect of velocity, $F(1, 155) = 47.37$, $p < .01$. There was no significant difference in perceived goal value, commitment level, or mood across conditions.

How, then, did these concerns influence participants' motivation? Specifically, did the two concerns ("Can I get there?" vs. "When will I get there?") weigh differently when people advanced from a low to a high level of progress? To answer this question, we performed two moderated mediation analyses. In the first analysis, we examined whether the relationship between velocity feedback (low vs. high) and one's motivation was mediated by participants' concerns about "Can I get there?" and whether this mediation was moderated by their progress levels. According to our theorizing, the path from velocity feedback (independent variable) to motivation (dependent variable) should operate through the concern about "Can I get there?" (mediator), and this should apply only when one has achieved a low (vs. a high) level of progress.

To assess this moderated mediation model, we followed Preacher, Rucker, and Hayes (2007, Model 3) and used a bootstrapping procedure that generated a sample size of 5,000 to assess the regression models. The first part of this model showed that velocity positively predicted participants' perceived goal attainability, $\beta = .35$, $t(159) = 4.72$, $p < .01$. The second part of the model, which regressed participants' motivation on velocity,

their concern about "Can I get there," their progress level, and the interaction between their concern and progress levels, yielded a significant Concern × Progress Level interaction, $\beta = -.24$, $t(159) = -2.98$, $p < .01$, suggesting that the effect of the concern about "Can I get there?" on participants' motivation depended on their level of progress. Specifically, when participants' progress level was low, high perceived goal attainability (an inference based on high velocity) elicited greater motivation, $\beta = .19$, $z = 2.48$, $p = .01$; this effect, however, became nonsignificant when participants' progress level was high, $\beta = .01$, $z = .44$, *ns* (see Figure 4).

We then performed a second moderated mediation analysis to examine whether the path from velocity feedback (independent variable) to motivation (dependent variable) operated through the concern about "When will I get there?" (mediator), and whether it applied only when one had made a high (vs. a low) level of progress.

The first part of this model showed that velocity feedback positively predicted how soon participants thought they could reach 900 points for the reward, $\beta = .48$, $t(159) = 6.84$, $p < .01$. The second part of the model regressed participants' motivation on velocity, their concern about "When will I get there," their progress level, and the interaction between their concern and progress levels, and yielded a significant Concern × Progress Level interaction, $\beta = -.28$, $t(159) = -3.50$, $p < .01$, suggesting that the effect of the concern about "When will I get there?" on motivation again depended on their progress level. When the progress level was high, the concern about when one could attain the goal elicited greater motivation, $\beta = -.26$, $z = -4.69$, $p < .01$; this effect, however, was not significant when the participants' progress level was low, $\beta = -.01$, $z =$

- .01, *ns* (see Figure 5). This analysis suggests that only when people have accumulated sufficient progress do they switch to focus on the timeframe of goal attainment, and their concern about "When will I get there?" influences their motivation.

Results from Study 2 support our proposed mechanism that the type of velocity (high or low) affects motivation differently, depending on the stage of pursuit. Based on our conceptualization, people shift their primary concern from "Can I get there" to "When will I get there" when they become relatively certain about the goal's attainability. Our next two studies will test this specific hypothesis by varying the point when people can be certain about whether they can attain the goal. Specifically, we reason that if the level of progress indeed switches people's focus by confirming goal's attainability, then whenever high levels of progress do not confirm goal's attainment (such as when goal attainment does not depend on an individual's performance), people should be motivated more by the knowledge that they are moving at a high (vs. a low) velocity, regardless of their progress level. Conversely, if people can be certain about the goal's attainability early on in the pursuit, they should be motivated by low (vs. high) velocity even when their current progress is still low. We tested these implications in Study 3 and Study 4.

Chapter 4: Study 3 – Collaboration

Participants in Study 3 completed a number-related task for a performance-based reward. The task was framed either as an individual task, in which the attainability of the reward depended solely on participants' own performance and thus became relatively certain as one accumulated sufficient progress, or as a collaborative task, in which the attainability of the reward was based on joint performance with an unknown teammate and thus remained uncertain throughout the task.

Method

A total of 229 undergraduates (111 females, 118 males) participated in this study. The experiment used a 2 (progress level: low vs. high) × 2 (velocity: low vs. high) × 2 (task frame: individual vs. collaborative) between-subjects design.

Participants completed a study that was professed to test people's sense of numbers. The instructions explained that the task was divided into multiple sections and that participants would gain points for correctly answering each question. We framed the task as either individual or collaborative in determining the performance-based reward: In the individual-task conditions, participants could win an additional $30 cash reward if they could reach 700 points by the end of the task; therefore, whether they could win the bonus depended solely on their own performance. In the collaborative-task conditions, participants would be randomly paired with another student who was completing the same task in a separate room. If their average score reached 700 points, each of them would win an additional $30 cash reward. In this case, whether they could win the reward

depended not only on their own performance, but also on that of an unknown person; therefore, attainment remained relatively uncertain throughout the goal pursuit.

After the general instructions, participants started the first section of the task and completed 10 number-related questions (e.g., "If $x + (x + 1) + (x + 2) = 366$, what is x?"). Participants indicated their answers on a slider with numbered marks only on both ends and were told that the points they would gain depended on how close their answers were to the correct number on the slider. This procedure was used to ensure that participants were less certain about the exact points they would gain even if they knew the correct answer, allowing us to more convincingly manipulate their progress level and velocity.

We manipulated progress level and velocity through feedback to participants. In high progress conditions, participants earned 505 points after the first 10 questions, whereas those in low progress conditions earned 205 points after the same 10 questions. We again manipulated participants' perceived velocity through social comparison: After the first section, a feedback page informed participants in high velocity conditions that "based on the questions you have completed so far, you are gaining points at a FASTER rate than the majority of participants in our database," whereas the participants in low velocity conditions were told that they were gaining points at a slower rate than that of the majority of participants in the database.

After the feedback, participants answered a few questions about their feelings toward the experiment, including their current mood level (7-point scale; 1 = *very bad*, 7 = *very good*), among other filler questions. After answering these questions, participants entered the second section, in which they needed to provide exact answers in a box,

instead of using a slider, for questions similar to those in the first section. For incorrect answers, a pop-up notification would ask them to try again. Alternatively, participants could skip the question by clicking "Continue."

We made the three questions in this section unsolvable and recorded the time participants spent on them before giving up as the indicator of their motivation. After completing this section of questions, participants were thanked and debriefed.

RESULTS AND DISCUSSION

We conducted a regression analysis on the average time that participants spent on these unsolvable questions using progress level, velocity, task frame, and all of their interaction terms as predictors. This analysis yielded a Progress Level × Velocity × Task Frame three-way interaction, $F(1, 220) = 5.70$, $p < .05$. We then explored the impact of velocity feedback on participants' motivation depending on their progress level, in each type of task. As hypothesized, there was a significant Progress Level × Velocity interaction in the individual-task condition, $F(1, 220) = 13.5$, $p < .01$. Consistent with earlier studies, when the progress level was low, those who thought they were gaining points quickly spent more time on the unsolvable questions (M = 52.38 s) than did those who thought they were gaining points slowly (M = 31.97 s), $F(1, 220) = 9.46$, $p < .01$. In contrast, when the progress level was high, those who thought they were gaining points slowly spent more time on the same unsolvable questions (M = 60.78 s) than did those who thought they were gaining points at a faster rate (M = 49.30 s), $F(1, 220) = 4.61$, $p < .05$.

Importantly, this pattern of results was not observed when the task was framed as a collaborative task, and the attainability of the goal ("Can I get there?") remained uncertain throughout the task; instead, we found a main effect of velocity, $F(1, 220) = 9.71$, $p < .01$. For all participants in this condition, those who thought they were gaining points quickly spent more time on these unanswerable questions (M = 54.39 s) than did those who thought they were gaining points slowly (M = 38.10 s) (see Figure 6). Also, in this study, participants' mood levels did not significantly differ across conditions, $F(1, 220) = .73$, *ns*, nor did mood predict participants' motivation in reaching the goal, $\beta = -.04$, *ns*; therefore, we could rule out mood as an alternative account for the present findings.

The results of Study 3 demonstrated that when the goal attainability continued to be uncertain, even high progress levels did not make people shift from asking, "Can I get there?" to "When will I get there?" Thus, a high (vs. a low) perceived velocity remained more motivating. This pattern confirmed that it is indeed the certainty about goal attainability that determined people's interpretation of velocity and its subsequent impact on motivation. In our next study, we test this mechanism from yet another perspective: If people switch to question "When will I get there?" and are concerned about the timeframe of goal attainment after they become relatively certain about the goal's attainability, they should be motivated by low (vs. high) velocity whenever they believe the goal is attainable—even when their current progress is still low.

Chapter 5: Study 4 – Wine Labels

In Study 4, we provided information on the attainability of the goal at an early stage of goal pursuit and assessed whether people who had received the early confirmation of goal attainability would behave like those who had accumulated sufficient progress and become more motivated by a low (vs. a high) rate of progress.

METHOD

A total of 225 undergraduates (105 females, 120 males) participated in Study 4 in return for cash compensation. This study used a 2 (velocity: low vs. high) × 2 (confirmation of goal attainability: no vs. yes) between-subjects design.

The cover story told participants that the researchers were interested in how people process information on wine labels. The participants' task was to complete nine rounds of label-related questions. In each round, they would view a wine label and answer some questions (e.g., place of origin, vintage, name) according to their memory of the information on the labels. Participants were allowed to spend as much time as they wanted to memorize the information, and they would receive points for correct answers as well as a $30 bonus for reaching 900 total points after nine rounds. Participants were further told that feedback would be provided after each round, including on their accumulated points (in absolute numbers) and on their momentary rate of progress (in percentile among all participants, according to the points they gained in the previous question). We displayed participants' total accumulated points as a number next to their

goal of 900 points (e.g., "200/900") and their momentary speed as a number on a vertical bar anchored by 0% (slowest in the database) and 100% (fastest in the database).

After two trial rounds, participants commenced the main task. We ensured that all participants made the same, steady progress toward the goal of 900 points, gaining about 100 points in each question. We then manipulated participants' momentary velocity by telling them that they were performing at around the 20th percentile (e.g., 20%, 23%) after each round (low velocity conditions), or at around the 80th percentile (e.g., 78%, 83%) after each round (high velocity conditions). By providing information on both level and rate of progress, we were able to manipulate the two variables independently and to discern their respective impact.

We also divided the task into three stages, with three rounds in each stage. In addition to the regular feedback, all of the participants received an additional piece of feedback after the first three rounds saying, "You have completed Stage 1 and have gained 305 points." Participants in the early confirmation conditions were further told that, "Based on your performance, you are qualified to proceed to the Stage 2. Our records indicate that most participants who qualified for Stage 2 succeeded in reaching 900 points." In comparison, participants in the no confirmation condition were told only that they had qualified for Stage 2.

In all of the conditions, we measured the amount of time that participants spent on memorizing the wine label in each round as the indicator of their motivation for reaching the final goal of 900 points. All participants were debriefed after completion of the task and were entered into a lottery for a cash reward.

RESULTS AND DISCUSSION

We first computed separate measures of participants' motivation depending on their levels of progress: the total time participants spent on memorizing wine labels in Stage 1 (Rounds 1 to 3—low progress, before the manipulation of confirmation), in Stage 2 (Rounds 4 to 6—moderate progress, after manipulation of confirmation), and in Stage 3 (Rounds 7 to 9—high progress), and performed separate ANOVA analyses on these measures. The analysis on time spent in Stage 1 (low progress) yielded only a main effect of perceived velocity, $F(1, 187) = 11.06$, $p < .01$. At this stage, participants who were gaining points at a relatively fast rate spent more time memorizing wine labels (M = 92.22 s) than did those who were progressing more slowly than others (M = 71.84 s). The analysis on time spent in Stage 3 (high progress) also yielded only a main effect of perceived velocity, $F(1, 187) = 8.33$, $p < .01$, showing that participants who were gaining points at a slower rate spent more time memorizing wine labels (M = 87.80 s) than did those who thought they were progressing faster than others (M = 68.16 s).

More importantly, the analysis on the amount of time spent in Stage 2 yielded the predicted Perceived Velocity × Confirmation interaction, $F(1, 187) = 5.99$, $p < .05$, and there were no main effects. At this middle stage, among the participants who did not receive confirmation on goal attainability, there was no significant difference between those who thought they were moving at a faster rate (M = 88.30 s) and those who thought they were progressing more slowly than others (M = 73.24 s), $t(91) = -1.42$, $p = .16$. If anything, the pattern seemed to be consistent with that observed when progress level was low: higher perceived velocity was more motivating than slow. In contrast, among the

participants who received confirmation on goal attainability, those who were gaining points slowly spent significantly more time memorizing wine labels (M = 96.70 s) than did those who were progressing quickly (M = 76.76 s), $t(96) = 2.08$, $p < .05$ (see Figure 7). This result suggests that relative certainty of goal attainability made people with low progress behave more like those who had achieved high progress and focus more on the timeframe of goal attainment.

The design of the study further allowed us to explore the trend of people's motivation as they progressed toward the end point of goal attainment, and, in particular, how their motivation changed when goal attainment was relatively secured. According to our model, when initial goal progress is high and people are relatively certain about goal attainment, a high velocity in progressing should suggest that they are successfully reducing the remaining discrepancy in a timely manner; therefore, they should maintain, or even decrease, their effort. On the other hand, a low velocity in progressing at the same stage should suggest that the goal attainment might be delayed and that they should increase their efforts to ensure a speedy attainment. We analyzed the motivation of participants in the no-confirmation group to test these predictions and found the expected pattern: For participants receiving low velocity feedback, their effort did not differ significantly between Stage 1 (70.42 s) and Stage 2 (73.24 s), $F(1, 46) = .70$, *ns*, but it significantly increased from Stage 2 to Stage 3 (84.91 s), $F(1, 46) = 14.76$, $p < .01$, constituting a linearly increasing trend as the participants accumulated greater progress, $F(1, 46) = 12.14$, $p < .01$. In contrast, for participants receiving high velocity feedback, their effort remained unchanged as they moved from Stage 1 (93.37 s) to Stage 2 (88.30

s), $F(1, 45) = .93$, *ns*, but dropped significantly from Stage 2 to Stage 3 (65.81 s), $F(1, 45) = 69.95$, $p < .01$, constituting a linearly decreasing trend, $F(1, 45) = 47.07$, $p < .01$. This pattern suggests that when people approach the end point of a goal (vs. at initial stages of pursuit), a low velocity in progressing increases their motivation, whereas a high velocity in progressing has the opposite impact.

The results of Study 4 provided further evidence that people derive greater motivation from a high (vs. a low) velocity in progressing when they ask, "Can I get there?" but that they are more motivated by low (vs. high) velocity when they ask, "When will I get there?" In our final study, we tested the implications of the findings using another field experiment in the context of a customer loyalty program.

Chapter 6: Study 5 – Free Coffee

In Study 5, we distributed two different versions of loyalty cards at a coffee shop: a "uniform velocity card" that gave customers a fixed number of points for purchases at all stages in the program, or a "variable velocity card" that allowed customers to accumulate points at a faster rate initially and at a slower rate when they approached the redemption point.

METHOD

The field study used a two-cell design (uniform velocity vs. variable velocity). We designed the program so that it required customers to accumulate 24 points on a loyalty card within 6 weeks to redeem for a free coffee and cookie combo. Depending on the condition, customers received either a uniform velocity card or a variable velocity card. Both conditions required eight purchases in total to reach 24 points, and the only difference was the rate at which consumers could accumulate points: For customers with the uniform velocity card, each coffee purchase would earn three points. For customers with the variable velocity card, each of the first four purchases would earn five points, and then one point for each of the next four purchases. Therefore, even though the number of necessary purchases was identical in both conditions, consumers experienced a different rate of progress in the program while making the same number of purchases. We distributed a total of 120 cards among customers of a coffee shop on campus and recorded the issuing date, date of purchases, and redemption date.

RESULTS AND DISCUSSION

By the end of the program, we collected a total of 38 cards—a total redemption rate of 31.67%. A chi-square analysis revealed that 23.80% of the customers in the uniform velocity condition redeemed the card, as compared with 40.35% in the variable velocity condition, χ^2 (1, N = 120) = 3.80, $p < .05$.

In addition to the redemption rate, two additional variables were analyzed as indicators of consumers' motivation: First, as compared with customers who got the uniform velocity card (M = 3.20 days), those who were given the variable velocity card were quicker to come back after they received the card (M = 0.83 days), t(36) = 3.63, $p < .01$, an indication that they were more motivated to initiate the pursuit of the goal. In addition, we found that customers in the variable velocity condition took less time to complete all necessary purchases for redemption (M = 16.78 days) than did those in the uniform velocity condition (M = 24.80 days), t(36) = 2.37, $p < .05$. Interestingly, once customers completed all purchases, the time it took for them to come back to redeem the reward did not differ between the variable velocity (M = 2.78 days) and the uniform velocity (M = 3.73 days) conditions, t(36) = .63, *ns*, further indicating that what motivated customers in the variable velocity condition was the goal to reach the end point, rather than their inherent preference for the coffee. In summary, the results of Study 5 further confirmed our hypothesis in a real-world marketing context; we found that a loyalty program with a variable velocity structure that addressed customers' different concerns at initial versus advanced stages of goal pursuit was more effective in motivating repeated purchases.

Chapter 7: General Discussion

Because people have different concerns at various stages of goal pursuit, they interpret their rate of progress toward the end point differently to address their concerns about either goal attainability ("Can I get there?") or the timeframe of goal attainment ("When will I get there?"). We found that although a high velocity in progressing confirms that one can attain the goal and motivates further pursuit when one's initial progress level is low and goal attainability is uncertain, a low velocity in progressing suggests that extra effort is necessary to ensure a speedy attainment and motivates further pursuit when one has accumulated sufficient progress and the goal attainability is relatively secured.

The results of five studies provided consistent support for the hypothesized dynamics. Using a public charity goal context, in Study 1, we showed that when the progress level on volunteer recruitment was low, a high (vs. a low) velocity of recruitment elicited more contributions; however, when the progress level on reaching the campaign goal was high, a low (vs. a high) velocity motivated more committed help. In Study 2, we directly measured people's concerns at different stages of goal pursuit and confirmed that high (vs. low) velocity motivated effort in initial stages of goal pursuit by increasing the perceived attainability of the goal, and that low (vs. high) velocity motivated effort in later stages of goal pursuit by suggesting the need for additional effort to ensure speedy attainment. In Studies 3 and 4, we directly tested the proposed mechanisms by delaying or moving up the confirmation of goal attainability, and showed that it was indeed people's concerns about "Can I get there?" versus "When will I get

there?" that determined the impact of momentary velocity on motivation. Finally, in Study 5, we used a real customer loyalty program to demonstrate that the point structure that allowed consumers to experience a high velocity of point accumulation in the beginning but a low velocity later on motivated more repeated purchases than the traditional point structure that awarded points at a constant speed throughout the program.

IMPLICATIONS FOR SELF-REGULATION THEORIES

Central to our model is consumers' spontaneous shift of focus from the question, "Can I get there?" to "When will I get there?" as they progress toward the end point of goal pursuit. This shift has important implications for the Expectancy × Value models, which have frequently been adopted to explain people's motivation in goal pursuit (e.g., Olson, Roese, and Zanna 1996; Vroom 1964). Our findings suggest that the two determinants of motivation do not always play equal roles. Consistent with Zhang and Huang's (2010) findings, we suggest that goal attainability—a key aspect of expectancy (Liberman and Förster 2008)—has a stronger impact on motivation when the question "Can I get there?" is the primary concern, either because people are still far from the end point (Studies 1 and 2) or because the outcome does not completely depend on their own performance (Study 3). In these situations, a high velocity in progressing, which allows people to infer higher expectancy of goal attainment, should be more effective in increasing people's motivation.

While previous findings suggest that people derive motivation primarily from the value of the goal once they are relatively certain about the goal's attainability (e.g., Zhang and Huang 2010), the present research suggests an alternative mechanism that influences motivation without altering the goal value. In our studies, we found that people's concern about the timeline of goal attainment did not impact the goal value (e.g., Study 2). Instead, low velocity operates through an informational route and elicits motivation by suggesting a need for additional effort for a speedy goal attainment. Accordingly, whenever a speedy attainment is of little value and people are not concerned about the timeline of attainment, the information on velocity should have minimal impact on motivation.

The present research also has specific relevance for research in the classical "goal looms larger" effect on motivation (e.g., Liberman and Förster 2008). Whereas previous findings have focused on how individuals' relative position to goal attainment can influence their motivation, we suggest that, even holding the level of progress constant, the perception of a high or a low rate of progress can independently affect their motivation by providing information that addresses different concerns they have. Unlike the level of progress, the velocity of movement may increase or decrease consumers' motivation in goal pursuit, depending on whether they focus on the question "Can I get there?" or "When will I get there?"

In the present model, we also extended extant research that conceptualized the level of progress (i.e., action system) and the velocity in progressing (i.e., rate system) as two parallel systems and treated them as two orthogonal factors. In our framework, the

level of goal progress determines the primary concerns people have about the pursuit. Depending on their stages in a goal pursuit, people interpret the information on velocity differently to address their active concerns. This conceptualization allowed us to manipulate the two variables independently and to identify the opposite impact of the same progress rate (low or high) at various stages of goal pursuit.

An interesting aspect left unexplored in the present research is the variation of velocity. In our studies, participants received information only about constant velocity (low or high) and experienced no change in the rate of progress. Although some customers in Study 5 experienced some variation, this decrease happened during a relatively long period of time and may not have generated a noticeable impact on motivation. Prior research, however, has found that people moving along a decreasing trend of velocity (e.g., having decreasing task performance) experience a negative mood (Lawrence, Carver, and Scheier 2002), which may further influence their motivation. Future research can explore how the variations in velocity, including the magnitude and direction of the changes, can be of more informational value in addressing consumers' concerns and influencing their motivation.

Although the present research demonstrated that people switch from asking "Can I get there?" to "When will I get there?" as they progress toward the end point of a goal, future investigation should further explore the spontaneous nature of this shift. For example, does spontaneity mean that people are unaware of the changes in the source of motivation? Similarly, would the spontaneous switch influence whether people actively

seek different types of feedback (positive vs. negative) in goal pursuit? Future research should address these important questions.

IMPLICATIONS FOR MARKETING AND NONPROFIT ORGANIZATIONS

The present research has important implications for marketers who try to increase consumer motivation in goal pursuit. For example, when designing customer loyalty programs, our findings suggest that the loyalty program will be more effective in generating repeated purchases if it is structured to address consumers' active concerns. An effective loyalty program, as we demonstrated, should allow customers to experience a relatively speedy start to signal higher attainability of the reward, but a relatively slow rate of progress once they are well into the program, because a low velocity suggests a greater need for effort to ensure a speedy attainment. Similarly, to motivate purchases, marketers should consider designing separate loyalty programs for customers who are asking, "Can I get there?" (e.g., first-time buyers) and for those who feel relatively certain about the goal's attainability (e.g., experienced customers) and are asking, "When will I get there?" On the basis of our findings, a program that allows customers to experience a low velocity in progressing will be motivating for repeat customers, whereas a program that gives customers a sense of high velocity in progressing should be more attractive for new customers.

Furthermore, because people rely on the same information when working on a social goal as on personal goals (Koo and Fishbach 2008), the present research also sheds important light on how organizations can motivate people to join forces and contribute to

a social cause. We suggest that the communication strategy should be tailored to the level of progress on the goal and to the public's current concerns, so that it focuses on "We *can* get there" initially, but shifts to emphasize the need for additional effort so that "We *will* get there soon." Information on velocity, accordingly, should be presented in a way that addresses the corresponding concerns. For example, given the same actual donation in a given period of time, an organization raising funds might choose to provide information about goal progress at longer intervals initially, so that each time the public will perceive a larger increase in donations and therefore experience a higher velocity in progressing and higher perceived goal attainability. As they get closer to the end point, feedback on progress should be given more frequently so that the public perceives less progress in donations between intervals, creating a sense of slow momentary speed and in turn eliciting greater motivation. By understanding different concerns that people have in goal pursuit and tailoring the communication strategies accordingly, social agents can be more effective in motivating greater effort investment.

SECTION 2: SO NEAR AND YET SO FAR: THE MENTAL REPRESENTATION OF GOAL PROGRESS

Introduction

In the course of goal pursuit, people often actively monitor their levels of progress, and these assessments can have a profound influence on their subsequent motivation (e.g., Carver & Scheier, 1998; Fishbach, Dhar, & Zhang, 2006; Louro, Pieters, & Zeelenberg, 2007). For example, motivation increases as people are getting close to the end point of goal pursuit (Förster, Higgins, & Chen Idson, 1998; Hull, 1932; Liberman & Förster, 2008), and they may also feel liberated to pursue other goals if they perceive that a sufficient level of progress has been made on the focal pursuit (Fishbach & Dhar, 2005). However, what determines people's assessment of their progress? Is it always the case that people form accurate mental representations of their progress level and then act based on these assessments?

In the present research, we propose a self-regulatory analysis of people's mental representation of goal progress and explore the possibility that the mental representation of progress level, instead of being a faithful reflection of one's actual pursuit level, can function as a self-regulation mechanism that helps to ensure subsequent motivation in the pursuit of important goals. We suggest that when individuals have just started pursuing a goal and have accumulated limited progress, they are primarily concerned about the

attainability of the goal and derive their motivation from the sense that the goal is attainable. Therefore, they are likely to exaggerate the level of progress in their mental representation to signal a higher chance of eventual goal attainment, which in turn helps to elicit greater motivation. However, when people have made substantial progress and are approaching the end point of the pursuit, the attainment of the goal is relatively secured and they derive their motivation from the sense that discrepancy still exists between their current and desired states. At these times, individuals are likely to downplay the achieved progress to signal a greater need for effort in their mind, which consequently helps elicit greater effort in the pursuit.

Chapter 8: Literature Review

Mental Representation of Progress

Prior research has shown that people's level of progress on a goal can have a profound impact on their motivation. For example, in the pursuit of goals with specific endpoints, people are motivated by the progress that needs to be made to achieve goal attainment (Carver & Scheier, 1998; Higgins, 1987; Locke & Latham, 2002). Relatedly, the Goal Gradient Hypothesis documents the phenomenon that people's motivation increases as they move closer to the endpoint of the pursuit (Lewin, 1935, 1951; Liberman & Förster, 2008).

One common assumption in the extant research that studies how goal progress influences motivation is that there should be no systematic biases in people's mental representation of their level of progress, so that the perceived progress would be a generally faithful reflection of the actual levels. For example, a typical paradigm in these studies involve providing people with feedback on their level of progress before assessing their motivation, or monitoring the changes in people's motivation as they progress from the first step to the last one in the task (see, e.g., Förster, Higgins, & Chen Idson, 1998; Louro, Pieters, & Zeelenberg, 2007). While these findings did not explicitly assume that people hold veridical representations of their progress level, the study treatments and the interpretation of results were based on the assumption that people's mental representation of their progress level would not be systematically different from the objective feedback

received, so that the experimenter could reliably attribute motivational consequences to the progress level feedback.

While it is plausible to assume that people's mental representations of goal progress are reasonably accurate, oftentimes they could be susceptible to various influences. First, in many situations, one's precise progress on attaining a goal can be difficult to gauge. For instance, a weight watcher will need meticulous calculation to know exactly how well he or she is doing in controlling their daily calorie intake. Similarly, a political candidate can rely only on various mixed feedback during a campaign to infer the progress on obtaining the necessary votes, but cannot know the exact outcome until the moment of truth. Even for progress that we can easily measure, such as one's current weight or bank account balance, it is often the case that people maintain only a rough representation of their general position in relation to the desirable goal state, rather than representing the progress level using the most precise measurement.

The fact that goal progress can impact motivation, and that the precise mental representation of progress may be difficult to gauge or even entirely absent, raises the possibility that individuals may employ such representations as a mechanism to help motivate greater effort. From an instrumental perspective, the ambiguity in mental representations of goal progress allows people to systematically and strategically alter them, so that the modified representations can function to help maintain high levels of motivation. Specifically, we posit that while a dieter who hopes to lose 25 pounds and has made some progress will have a general sense of where s/he is at on this goal (i.e., the

initial stage of having lost a few pounds versus the more advanced stage of having lost a significant amount of pounds), this person will strategically bias how much progress s/he believes s/he has made toward attaining this goal, so that s/he can remain motivated throughout the pursuit.

Prior research has found ample support for the notion that perceptions and judgments are influenced by motivation (Balcetis & Dunning, 2006; Dunning, 2001; Dunning, Brewer, & Hewstone, 2004; Festinger, 1957; Gilbert et al., 2000; Kunda, 1990). For instance, distance perception is influenced by factors such as ease of reaching a tool only when the actor intends to use that tool (Witt, Proffitt, & Epstein, 2005), suggesting that how people perceive their surroundings greatly depends on their intention and motivation to act within it. Similarly, whether people believe that they have seen a letter ("B") or a number ("13") on a computer screen before it crashes is influenced by the outcome of such visual perception; the symbol that leads to a desirable freshly squeezed orange juice is believed to be seen by the majority of people, whereas the symbol that leads to a less desirable, chunky veggie smoothie is reported as less seen (Balcetis & Dunning, 2006).

In the context of goal pursuit, research has found that people modify their mental representation of the available options so that it is easier for them to resolve self-control conflicts in favor of the higher level goal (see, e.g., Mischel & Ayduk, 2004; Trope & Fishbach, 2000). For example, when encountering temptations that may undermine their pursuit of a long-term goal, people form psychologically distant representations of temptations so that they are likely to avoid these items (Fujita et al., 2006). Similarly,

individuals exaggerate the extent to which they believe such temptations can undermine their goal, so that the temptations appear more costly to pursue and are more likely to be avoided (Zhang, Huang, & Broniarczyk, 2010).

If indeed people systematically alter their mental representations of progress levels as an instrumental mechanism to help maintain high levels of motivation, what are the determinants of these alterations? Do people consistently exaggerate their progress, or downplay it? On the basis of the dynamics of self-regulation (Fishbach, Zhang, & Koo, 2009; Koo & Fishbach, 2008), we theorize that the direction of bias in mental representation depends on a person's stage of goal pursuit. That is, depending on whether people have just started to pursue a goal, or have made substantial progress and are approaching the end point, they either exaggerate or downplay, respectively, their specific progress level in their mental representations, such that their motivation for subsequent pursuit remains high.

ATTAINABILITY-BASED MOTIVATION

Based on the findings in the dynamics of self-regulation, people can construe their goal pursuit in two different ways: They can construe it either as commitment toward the desirable end state, or as making progress toward this desirable state. These two construals of goal pursuit, in turn, constitute two different sources of motivation: the commitment to the goal and the lack of progress on a goal (Fishbach, Zhang, & Koo, 2009; Koo & Fishbach, 2008). For instance, if a person has lost three pounds and interprets this progress as an indicator of his or her commitment to the goal of being

healthy, this person is likely to continue working out to lose more weight; on the other hand, this person can also focus on the discrepancy between having lost three pounds and the end goal of losing 10 pounds -- this lack of progress signals that more efforts will be necessary and will also be a motivator for continued effort.

It is unlikely, however, that individuals are concerned about both goal commitment and the lack of progress to the same extent at all times. Instead, when people first start to pursue a goal, they are less certain about their commitment to the goal and will question whether they should continue to work toward goal attainment; hence, their commitment level would be the main source of motivation at this stage. What, then, determines individuals' commitment level?

One important component of goal commitment refers to the belief that the goal is attainable (Atkinson, 1957; Bandura, 1997; Bandura & Pervin, 1989; Liberman & Förster, 2008; Lewin, 1951; Mischel, Cantor, & Feldman, 1996). For example, the expectancy-value models emphasize the cognitive assessment of one's chances of attaining the goal as an important factor for the motivation in the pursuit (Atkinson, 1957; Tolman, 1955; Vroom, 1964). Similarly, the social–cognitive model (Bandura, 1997) also suggests that a person's self-efficacious beliefs of whether the goal can be attained through effort will determine one's willingness to pursue the goal. Furthermore, goal-setting theory proposes that the assessment of attainability is an important factor in individuals' decisions to adopt a goal (Locke & Latham, 1990).

At the initial stages of goal pursuit, when one has only made limited progress and is still questioning whether the goal is attainable, the perception that greater progress has

been made on this goal signals that one is moving steadily toward the desirable end state, and that eventual attainment is more likely. It follows, therefore, that people may exaggerate how much progress they have made on the goal in their mental representations, so that the goal seems more attainable and they could remain motivated to continue the pursuit. For example, a couple who have just started to save for the down payment of a new house may exaggerate the amount of money they have saved in the first few months so that the needed amount does not seem so out of reach. By doing so, they become more committed to this goal, despite being only at the initial stage of the pursuit, and can stay motivated to push forward on this goal.

DISCREPANCY-BASED MOTIVATION

Individuals, however, do not always question the attainability of the goal or observe their achieved progress for assurance of goal attainability. When people have accumulated sufficient progress and are approaching the end point, they feel relatively confident about its attainment and thus are highly committed to this goal. At these stages, people focus instead on reducing the remaining discrepancy to the desirable end point (Higgins, 1987; Koo & Fishbach, 2008; Locke & Latham, 2002). For instance, once the couple who are saving for the new house have achieved sufficient progress and are approaching the needed amount, they should be less concerned about whether they can ultimately save enough for the down payment. The priority at this point will be to eliminate the remaining distance to finally reach the end point. In these situations, the remaining discrepancy becomes the main determinant of motivation.

Prior research has suggested that people mobilize their efforts on the basis of how much is left to be done in order to succeed (Brehm & Self, 1989; Brehm et al., 1983; Wright & Kirby, 2001). When people feel that more efforts are necessary to eliminate the remaining discrepancy on the goal, they become more motivated and increase effort accordingly. Conversely, if the remaining discrepancy seems trivial and requires little effort to overcome, motivation tends to drop and relaxation becomes more likely. Therefore, motivation at this advanced stage of goal pursuit should be negatively impacted by the size of discrepancy: As long as the goal is perceived to be attainable, the greater the discrepancy, the greater people's motivation should be.

If a more sizeable discrepancy to the end point induces greater motivation, it follows that people at the advanced stage of goal pursuit would downplay the level of progress they have achieved and, in turn, exaggerate the remaining distance to the end point, so that they remain motivated to eventually complete the goal. An exaggerated discrepancy in these situations, while not threatening the attainability of the goal, signals that one needs to invest more effort to eliminate the remaining gap, and thus should elicit greater motivation. Applying to the earlier example, for the couple who have accumulated sufficient progress toward the goal of saving for a new house, mentally downplaying the amount of their total savings (and hence exaggerating the remaining gap) signals that although they are well on track of reaching their goal, additional efforts and actions are still necessary. This systematic alteration of mental representation, in turn, should motivate more continued effort in saving.

Taken together, the present theorizing suggests that, while being aware of their general stages of goal pursuit, individuals also strategically alter the mental representations of their specific progress levels as a self-regulatory instrument to motivate further effort. The direction of the alterations, furthermore, depends on one's stage of goal pursuit: While people exaggerate their progress levels at the initial stage of goal pursuit to signal higher goal attainability, they downplay their specific progress level to signal the need for further effort when they are relatively close to the end point.

This theorizing goes beyond the extant paradigm in studying the impact of goal progress on motivation by challenging the assumptions that people always desire accuracy with their representations of goal progress and that the way people see their own progress should not be systematically different from the reality. In the present framework, the mental representation of goal progress is more than a faithful reproduction of the actual situation; instead, it reflects one's desire to complete the important goals, sometimes at the cost of accuracy. This conceptualization is also consistent with the Action-Based Model of cognitive dissonance (Harmon-Jones & Harmon-Jones, 2002; Harmon-Jones, Amodio, & Harmon-Jones, 2009), which builds on the assumption that perceptions and cognitions are action-oriented, and posits that dissonance motivates effort to bring cognitions in line with one's behavioral commitment, resulting in effective actions such as goal-directed behaviors; that is, dissonance is only aroused when effective action may be taken. Similarly, in the present theorizing, because the systematic alteration of mental representation is an instrumental mechanism to boost effort and to ensure the successful attainment of valuable goals, it should occur only when efforts are

necessary and effective in helping one secure goal attainment, and when the accuracy in mental representation is relatively unimportant. In other situations, such as when the goal is of little value, when efforts are ineffective in helping goal attainment, or when the costs of errors in mental representations are high, such alterations should not occur.

We tested our hypothesis in four studies. Across all studies, participants were asked to estimate their achieved progress at different stages of goal pursuit, and we measured their perceived specific progress level as well as their subsequent motivation in the pursuit. We started with a field study using a collective donation goal and examined whether individuals who perceived the collective goal to be of high (vs. low) value altered their mental representation of specific progress level, and in turn became more motivated to donate. Study 2 further tested if such alteration of mental representation could occur even when specific number-based feedbacks were provided. In Studies 3 and 4, we directly tested the self-regulatory nature of the observed phenomenon; we manipulated the effectiveness of effort in goal pursuit (Study 3) and the importance of accuracy in mental representations (Study 4), and tested whether the systematic alterations would still occur.

Chapter 9: Study 1 – T-shirt Donation Drive

In the first study, we aimed to examine our hypothesis in the real world with a field experiment. We simulated what people would normally encounter in their daily lives and used visual stimuli to provide vague feedback on progress. In addition, we included a control group to capture participants' baseline mental representation of progress, which served as the comparison benchmark to shed light on whether participants exaggerated or downplayed specific progress levels, as hypothesized. We also included process measures to examine whether people indeed had different concerns at different stages of pursuit. If people alter their perceived specific progress level to remain motivated in an important goal pursuit, they should exaggerate their specific progress level at early stages of pursuit to increase the perceived goal attainability when the goal value is high (vs. low), but conversely downplay the achieved specific progress level at more advanced stages of pursuit of the same high- (vs. low-) value goal, to signal a greater need for subsequent effort. Both of these alterations of specific progress level would lead to greater motivation in the pursuit.

The context of the field experiment was a t-shirt donation drive for a charitable cause. We manipulated the importance of the goal by changing the cause of donation and manipulated the stage in the pursuit by showing participants different visual stimuli: a high or low number of boxes full of donated used t-shirts to-date. We measured participants' mental representations of specific progress level by asking them to estimate

the number of t-shirts in these boxes, and we recorded the number of t-shirts they donated as the indicator of their motivation to attain this collective goal.

METHOD

Participants. A total of 305 American undergraduate students (124 men, 181 women) at the University of Texas at Austin participated in this study. The gender of the participants did not yield any effects here or in subsequent studies and was therefore omitted from further consideration.

Procedure. This study used a 2 (stage in the pursuit: initial vs. advanced) × 3 (goal value: low vs. high vs. control) between-subjects design. Participants first signed up for a regular session of extra-credit study, and the content of the study was not disclosed. Four days before the scheduled experiment date, these participants received an email about a used t-shirt donation drive on campus with a link to an online survey. In the high-value conditions, participants were first reminded of the recent January 2010 earthquake in Haiti (experiment was conducted four weeks after the earthquake). Then, they read a paragraph about how most refugees in Haiti were still in desperate need of living essentials such as shelter and clothing, and that without things as simple as basic clothing, many of them could not go back to school or to work. A picture of a refugee in Haiti was also included to raise attention to the issue. In the low-value conditions, participants read a paragraph about the economic situation in Honduras, and that half of the population still remained below the poverty line; a picture of the flag of Honduras was included in these conditions. A pretest using 7-point scales (1 = *Not at all* and 7 = *Very important* / *Very*

much) showed that participants perceived the issue of refugees in Haiti to be more important ($M = 5.10$, $SD = 1.46$) than that of poor people in Honduras ($M = 4.00$, $SD = 1.41$), $t(50) = 7.25$, $p < .01$. Furthermore, they cared about the refugees in Haiti more ($M = 5.12$, $SD = 1.29$) than they did for poor people in Honduras ($M = 4.18$, $SD = 1.38$), $t(50) = 6.95$, $p < .01$.

After reading about the issues, participants were informed that we were organizing a used t-shirt donation event on campus, and they were invited to donate some of their used t-shirts either to the refugees in Haiti or to the poor people in Honduras, depending on the condition. Specifically, we told participants that the campaign aimed to collect 1,000 t-shirts to send to refugees in Haiti (or to poor people in Honduras), and that the t-shirts could be of any size or color. To mimic individual goal pursuit situation, we led participants to believe that if the total donation amount was less than 1,000 t-shirts, the campaign would fail and the t-shirts collected may not be shipped to the designated countries. Participants then saw a picture of the used t-shirts we had collected so far for the campaign. In the initial-stage conditions, there were two full boxes (size 24" x 18" x 24") of t-shirts in the picture, whereas in the advanced-stage conditions, there were 10 full boxes of t-shirts in the picture (see Appendix for stimuli). In both conditions we emphasized that we still needed t-shirt donations, so that participants believed that their donation was critical for the campaign's success.

After viewing the picture of used t-shirts that we had collected for the campaign, participants were urged to participate in the donation event and were told that to better manage this campaign, we would like to first get some feedback on the organization and

communications of this campaign from potential donors such as them. The first question asked participants to estimate the specific progress of the campaign: they were asked to estimate how many used t-shirts they thought we had collected so far on the basis of the picture they saw on the previous page; participants typed a number between 0 and 1,000 in a textbox. In addition, participants were asked to indicate how likely they thought we could successfully reach the goal of collecting 1,000 t-shirts (7-point scale; 1 = *Not at all* and 7 = *Very likely*), as well as how hard they thought we needed to work to collect the remaining t-shirts to reach the goal of getting 1,000 t-shirts (1 = *No need to work at all* and 7 = *Work very hard*). The former question gauged participants' perceived goal attainability, whereas the latter question measured their concern for discrepancy reduction. These questions were embedded among other filler questions about the campaign.

Participants were then told that donation boxes would be set up when they came to the lab to participate in the extra-credit study a few days later. If they were willing to donate their t-shirts, they could simply bring their t-shirts with them and drop them off at the lab. Participants were assured that this donation drive was not part of the requirement for extra credit and that it was completely voluntary whether to donate. Participants were also offered an alternative drop-off time and location in case they could not bring the t-shirts to the lab. When participants came to the lab for an extra-credit study four days later, we set up a small donation site at the corner of the lab, and a campaign assistant accepted and recorded all of the donations. We used the last four digits of participants' phone numbers to match their actual donations with the information they provided in the

online survey, while maintaining the anonymity of the donation process. We then used the number of t-shirts that the participants donated as an indicator of participants' motivation to help attain this collective goal.

In control conditions, participants did not read any information about the t-shirt donation drive and were instead asked to take an evaluation task to evaluate stimuli such as words and pictures. During the task, they viewed the same pictures of two or 10 boxes of t-shirts and were asked to estimate the number of t-shirts in these pictures; their estimates served as the baseline numbers in our analyses.

RESULTS AND DISCUSSION

Mental representation of specific progress level. Our first dependent variable was the progress that participants estimated—the number of used t-shirts in the boxes. Because the answers to this question were not normally distributed, we log-transformed the measure to reduce the skewness, then submitted it to a 2 (stage in the pursuit: initial vs. advanced) × 3 (goal value: low vs. high vs. control) factoral ANOVA. The analysis first yielded a main effect of perceived stage in the pursuit, $F(1, 299) = 103.93$, $p < .01$: participants who saw two boxes of donated t-shirts reported less progress ($M = 142.83$, $SD = 143.96$) than those who saw 10 boxes ($M = 575.47$, $SD = 535.81$). More importantly, this main effect was qualified by a Stage in the Pursuit × Goal Value interaction, $F(1, 299) = 8.18$, $p < .01$. To examine the interaction term and explore how the treatments differed among three levels of goal value, we assigned orthogonal planned contrast codes based on the goal value conditions. Of primary interest was the contrast

code of (2, -1, -1) for the high-value condition, the low-value condition, and control condition, respectively. This code allowed us to contrast the high-value condition that we believed would induce the alteration of mental representation with the other two conditions. The other contrast code was (0, -1, 1), to test the difference between the low-value and control conditions. The planned contrast analyses at each stage in the pursuit revealed that among participants who saw two boxes of t-shirts in the picture, those who thought the campaign was for earthquake refugees in Haiti estimated more t-shirts in these boxes (M = 220.84, SD = 194.89) than those who thought the campaign was for poor people in Honduras (M = 109.36, SD = 82.96) and those in the control group (M = 91.51, SD = 77.36), $F(1, 153) = 29.39$, $p < .01$; there was no significant difference between the latter two groups, $F(1, 153) = .46$, *ns*. In contrast, among participants who saw 10 boxes of t-shirts in the picture, those who thought the campaign was for refugees in Haiti estimated fewer t-shirts in the boxes (M = 424.00, SD = 326.39) than those who thought the campaign was for poor people in Honduras (M = 711.06, SD = 758.70) and those in the control group (M = 617.13, SD = 418.35), $F(1, 146) = 7.25$, $p < .01$; there was no significant difference between the latter two groups, $F(1, 146) = .75$, *ns* (see Figure 8).

Different concerns in goal pursuit. We further performed a 2 (stage in the pursuit: initial vs. advanced) × 2 (goal value: low vs. high) factoral ANOVA on participants' perceived attainability of the goal as well as on their concern for discrepancy reduction, excluding those participants in the control group. The analysis on the likelihood of attaining the goal showed a main effect of stage, $F(1, 203) = 31.33$, $p <$

.01, such that participants who saw two boxes of donated t-shirts perceived the goal to be less attainable ($M = 5.46$, $SD = 1.34$) than those who saw 10 boxes ($M = 6.32$, $SD = .90$). The main effect was qualified by the hypothesized Stage in the Pursuit × Goal Value interaction, $F(1, 203) = 4.59$, $p < .05$. For the participants who saw two boxes of donated t-shirts, those in the Haiti campaign condition thought that the goal of collecting 1,000 t-shirts was more likely to be attained ($M = 5.75$, $SD = 1.30$) than those in the Honduras campaign condition ($M = 5.14$, $SD = 1.32$), $t(103) = – 2.35$, $p < .05$, and the estimated progress level predicted their perceived likelihood of goal attainment, B = .003, $t(103) = 3.98$, $p < .01$. However, consistent with our theorizing, neither the difference in the likelihood of goal attainment, nor the correlation, existed among participants who saw 10 boxes of donated t-shirts ($M_{Haiti} = 6.29$, $SD = .90$ vs. $M_{Honduras} = 6.36$, $SD = .92$, *ns*).

We conducted the same analyses on people's concern on the reduction of discrepancy. The 2 (stage in the pursuit: initial vs. advanced) × 2 (goal value: low vs. high) factoral ANOVA first showed a main effect of stage, $F(1, 203) = 4.44$, $p < .05$; participants who saw two boxes of donated t-shirts thought that we should put in more effort to collect remaining t-shirts ($M = 5.80$, $SD = 1.24$) than those who saw 10 boxes ($M = 5.41$, $SD = 1.61$). The main effect was qualified by the hypothesized Stage in the Pursuit × Goal Value interaction, $F(1, 203) = 4.06$, $p < .05$. Subsequent contrast analyses showed that for participants who saw 10 boxes of donated t-shirts, those in the Haiti campaign condition thought that we should put in more effort to collect the remaining t-shirts ($M = 5.71$, $SD = 1.36$) than those in the Honduras campaign condition ($M = 5.06$, $SD = 1.81$), $t(100) = –2.05$, $p < .05$, and the estimated progress level negatively predicted

how much effort they thought was needed to reach the goal, B = - .001, $t(100) = -4.55$, $p < .01$. However, as expected, there was no significant difference among participants who saw two boxes of donated t-shirts regarding how much more effort was required to reduce the remaining discrepancy ($M_{Haiti} = 5.73$, $SD = 1.22$ vs. $M_{Honduras} = 5.88$, $SD = 1.27$, *ns*), nor a correlation between the progress level and the expectation of additional effort.

Motivation. We then examined how the factors of stage in the pursuit, goal value, and people's estimated specific progress levels, together, influenced their actual donation behaviors. Since only 46.4% of participants chose to donate in this study (with a total of 307 t-shirts collected), we analyzed the data using a Tobit model with zero (no donation) as the lower limit. Specifically, we conducted Tobit analyses on the number of t-shirts that participants donated, using goal value, the stage in the pursuit, estimated progress, and all the interaction terms as predictors. The analysis yielded a Goal Value × Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - .01, $t(198) = -2.75$, $p < .01$, with no other effects. To further examine this three-way interaction, we then conducted Tobit analyses on the number of donated t-shirts using the stage in the pursuit, mental representation of specific progress level, and their interaction term as predictors for each of the goal value conditions, respectively. The results showed that, when the goal value was high (to help refugees in Haiti), there was a main effect of stage in the pursuit, B = 2.33, $t(105) = 2.17$, $p < .05$, and more importantly, a significant Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = -.01, $t(105) = -3.22$, $p < .01$, suggesting that the effect of estimated progress on people's motivation depended on their current stage in the pursuit. Further analyses showed that,

consistent with our prediction, participants who saw two boxes of t-shirts collected for refugees in Haiti donated more t-shirts after reporting that more progress had been made on attaining the goal; specifically, these participants' estimated specific progress level positively predicted how many t-shirts they donated (B = .10, $t(52) = 2.58$, $p < .01$). In contrast, for participants who saw 10 boxes of t-shirts collected for refugees in Haiti, they donated more t-shirts after reporting that we had made less progress on the goal; that is, these participants' estimated specific progress level negatively predicted how many t-shirts they donated (B = – .10, $t(52) = – 1.92$, $p = .05$). However, supporting our prediction that biased progress estimates were less likely when the goal was of low value, the stage in the pursuit × mental representation of specific progress level interaction term was not significant when the campaign was for poor people in Honduras, B = .002, $t(92) = .68$, *ns*, and participants' estimated progress did not predict their actual donation at either stage of the pursuit (two boxes of t-shirts, B = – .03, $t(47) = – .65$, *ns*; 10 boxes of t-shirts, B = .001, $t(44) = .28$, *ns*).

Moderated mediation model. Lastly, we fully tested the relationships among various factors through a moderated mediation analysis. We followed Preacher, Rucker, and Hayes (2007, Model 5) and used a bootstrapping procedure that generated a sample size of 5,000 to assess the regression models. The first part of this model regressed participants' mental representation of specific progress level on goal value, stage in the pursuit, and their interaction term. The result was consistent with the earlier ANOVA and showed a main effect of stage, B = .39, $t(207) = 5.33$, $p < .01$, such that people in the advanced stages of pursuit estimated greater progress than those in the initial stages,

qualified by the Stage in the Pursuit × Goal Value interaction, B = - .17, $t(207) = - 2.36$, $p < .05$, suggesting that the impact of goal value on mental representation of specific progress level indeed depended on people's current stage in the pursuit (see Figure 2). The second part of the model, which regressed participants' motivation to donate on their mental representation of specific progress level, stage in the pursuit, goal value, the interaction between stage in the pursuit and goal value, and the interaction between stage in the pursuit and mental representation of specific progress level, yielded a main effect of stage, B = - .18, $t(207) = - 1.94$, $p = .05$, a main effect of mental representation of specific progress level, B = .42, $t(207) = 2.40$, $p < .05$, and more importantly, a significant Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - .44, $t(207) = - 2.56$, $p = .01$; the result suggested that it is people's mental representation of specific progress level that determined their motivation, and this relationship is moderated by their current stage in the pursuit (see Figure 9).

These results provided initial support for our hypothesis that people alter their mental representations of the achieved specific progress level to elicit greater motivation in the pursuit of valuable goals. In addition, by including a control condition and the measures for participants' concerns at different stages of goal pursuit, we were able to derive that it is indeed the case that people at the initial stages of pursuit exaggerate the specific progress level to increase the perceived goal attainability, and those at the advanced stages downplay their specific progress level to highlight the need for extra effort.

Chapter 10: Study 2 – Number-based Feedback and Willingness to Pay

In Study 2, participants completed a word identification task and were offered a limited-edition school magnet as a reward for reaching the required number of points. We manipulated their perceived stage in the pursuit by providing feedback on their current points. We then measured participants' mental representations of progress and their subsequent task efforts.

METHOD

Participants. A total of 143 undergraduate students (67 men, 76 women) at the University of Texas at Austin participated in the study on computers in exchange for partial course credit.

Procedure. In Study 2, we used a stage in the pursuit (initial vs. advanced) × goal value design, in which the stage in the pursuit was manipulated as a between-subjects factor, and the value of the goal was measured as an individual difference factor. All participants were told that the researchers were interested in how people identify different words, and that they needed to correctly identify and type down the strings of letters they saw on the screen. Participants were further told that the more letters they could correctly identify in the letter string, the more points they could earn. While shorter letter strings offered less points per question, longer letter strings would, together, offer more points per question; the maximum points participants could potentially earn in a letter string was set as 800 points. Participants were then told that they would receive an additional

prize—a limited-edition school magnet—if they could earn a total of 21,500 points or more by the end of the task. A picture of the prize was shown to participants, and we measured participants' perceived value of the goal by asking them to write down how much they would be willing to pay for the magnet if they were to buy this magnet in a store. We assumed that the more people were willing to pay for the magnet, the more valuable it was for them to reach 21,500 points in the task to obtain the prize.

After the instruction, participants commenced the task and answered the first 15 letter identification questions. The letters were heavily distorted and barely legible so that participants would be uncertain about the actual number of points they earned, making it possible for us to convincingly manipulate their perceived stage in goal pursuit. The time that participants spent on these 15 questions was recorded as a comparison benchmark. At the end of the first 15 questions, a pop-up box informed participants that the computer would now calculate their current scores. Participants in the initial-stage condition were told that they had earned 3,157 points thus far, whereas those in the advanced-stage condition were told that they had earned 11,813 points, suggesting that the attainability of the reward was relatively more secured. It is crucial to note that, because participants were not informed of the total number of questions in the task, and that the total points available for each question could vary based on the length of the letter strings, the feedback on current scores merely indicated their current progress on the goal of reaching 21,500 points, rather than providing information on the difficulty of the task, accuracy rate, or their relative ability to succeed. The questions inserted at the end of the study provided additional assurance for the validity of this manipulation: There was no

significant difference in participants' perceived difficulty of the task between the initial-stage and the advanced-stage conditions (B = - .15, $t(139) = - 1.46$, *ns*), nor was there a difference in their perceived ability to succeed in this task (B = .06, $t(139) = .68$, *ns*).

Upon receiving their current scores, participants were reminded that they had a limited number of questions left, and that they needed to earn 21,500 points (or more) to win the reward. A few questions then appeared to ask participants to indicate their feelings and evaluations about the task before continuing. Among filler questions (e.g., mood scales), we asked participants to estimate their current progress: "Without calculating, what percentage of points have you earned so far toward the points required for the reward (please enter an estimate between 0% and 100%)?" After participants answered these questions, they were directed to answer more word-identification questions. For the ease of comparison, this section contained 15 questions that were similar in nature to those in the first section, and we measured the amount of time that participants spent on these questions as the indicator of their motivation to win the prize. After completing the task, participants were debriefed and dismissed.

RESULTS AND DISCUSSION

Mental representation of specific progress level. We regressed participants' estimated specific progress level (in percentages) on their stage in the pursuit, perceived goal value (mean-centered and standardized), and the interaction between the two factors. The analysis first yielded a main effect of stage in the pursuit, B = .44, $t(139) = 5.94$, $p <$ .01, suggesting that participants who thought they had earned more points reported

greater progress. More importantly, we found the predicted Stage in the Pursuit × Goal Value interaction, B = – .25, $t(139) = -2.83$, $p < .01$. We further explored the effect of goal value on the represented specific progress level at different stages in the pursuit by comparing the slopes of goal value at each stage. For participants who were at the initial stage of the pursuit and were thus highly uncertain about goal attainment, their perceived goal value positively predicted their reported specific level of progress, B = .20, $t(73) = 2.19$, $p < .05$; those who were willing to pay more for the prize reported having made greater progress on the goal. In contrast, for participants who were relatively close to the end point and thus were relatively certain about goal attainment, their perceived goal value negatively predicted their reported specific progress level, B = – .31, $t(66) = -2.14$, $p < .05$; those who were willing to pay more for the prize reported having made less progress. For the ease of interpretation, we graphed Figure 10 using goal value at one standard deviation above and below the mean (see Figure 10).

Motivation. How did the mental representation of progress influence our participants' subsequent motivation? In this experiment, participants were allowed to spend as much time as they wanted on the first 15 questions as well as the remaining 15 questions after receiving progress feedback; therefore, we could assess the change in the amount of time they spent on the questions after receiving progress feedback as a measure of the impact of their mental representations of progress. There was no significant difference in the time that participants spent on the first 15 questions (pre-feedback motivation) across conditions (stage in the pursuit: B = – .09, $t(139) = -1.11$, *ns*; goal value: B = – .10, $t(139) = -1.00$, *ns*; stage in the pursuit × goal value interaction:

B = – .08, $t(139) = – .76$, *ns*). To assess the change in their motivation after feedback, we deducted the time that participants spent on the first 15 questions (pre-feedback motivation) from the time that they spent on the second set of 15 questions (post-feedback motivation) to obtain a "time difference," and standardized the variable. We regressed this variable on people's stage in the pursuit, perceived goal value, mental representation of specific progress level, and all the interaction terms. The analysis yielded a main effect of stage in the pursuit, B = .21, $t(135) = 2.19$, $p < .05$, and a hypothesized Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - .36, $t(135) = - 3.60$, $p < .01$. We further examined the interaction term by comparing the slopes of reported progress at each stage of pursuit, and we found that for participants at the initial stage of pursuit, their mentally represented progress level positively predicted the change of their subsequent effort in attaining the goal, B = .35, $t(73) = 3.20$, $p < .01$; those who reported greater progress tended to increase their effort to a greater extent in the latter 15 questions. In contrast, for those who were at advanced stage of pursuit, their mentally represented progress level negatively predicted the change of their subsequent effort, B = – .64, $t(66) = – 6.81$, $p < .01$; those who reported less progress tended to increase their effort to a greater extent in latter questions.

Although we did not obtain the goal value × stage in the pursuit × mental representation of specific progress level interaction, on the basis of our a priori theorizing, we also followed the procedures in Study 1 and explored the stage in the pursuit × mental representation of specific progress level interaction when the goal value was one standard deviation above and below the mean, respectively. The results showed

a pattern consistent with Study 1: When the goal value was high, we observed a significant Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = – .08, $t(135) = – 2.48$, $p = .01$, suggesting that the estimated progress influenced motivation based on people's current stage; however, when the goal value was low, the stage in the pursuit × mental representation of specific progress level interaction term was less/not significant, B = – .06, $t(135) = – 1.63$, $p = .11$.

Moderated mediation model. Following the procedures in Study 1, we tested the relationships among all factors together through a moderated mediation analysis (Preacher, Rucker, & Hayes, 2007, Model 5) with a bootstrapping procedure that generated a sample size of 5,000. The first part of this model regressed participants' mental representation of specific progress level on goal value, stage in the pursuit, and their interaction term. The result again showed a main effect of stage, B = .44, $t(143) = 5.94$, $p < .01$, such that people in the advanced stages of pursuit estimated greater progress than those in the initial stages, qualified by the Stage in the Pursuit × Goal Value interaction, B = - .25, $t(143) = - 2.83$, $p < .01$, confirming that the impact of goal value on mental representation of specific progress level depended on people's current stage in the pursuit (see Figure 4). The second part of the model, which regressed participants' change of effort on their mental representation of specific progress level, stage in the pursuit, goal value, the interaction between stage in the pursuit and goal value, and the interaction between stage in the pursuit and mental representation of specific progress level, yielded a main effect of stage, B = .22, $t(143) = 2.44$, $p < .05$, and a significant Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = -

.36, $t(143) = -3.77$, $p < .01$; the result again confirmed that it is people's mental representation of specific progress level that determined their motivation, and this relationship is moderated by their current stage in the pursuit (see Figure 11).

These results provided further evidence for our hypothesis that people who value their goals will represent their achieved, specific level of progress in distinctive ways to maintain their motivation in the pursuit, even when the progress feedback was number-based. These altered mental representations of specific progress level, although biased, further determine individuals' subsequent motivation and effort in the pursuit.

If indeed the mental representation of specific goal progress is a self-regulatory mechanism that individuals use to ensure successful goal attainment, it should occur only when people believe that self-regulation is effective in helping them attain the goal. Whenever self-regulation is perceived to be ineffective in attaining the goal, such bias in mental representations should not occur. In Study 3, we tested this hypothesis.

Chapter 11: Study 3 – Self-Regulation Effectiveness

In Study 3, participants worked on a pitch differentiation task and were offered a reward for reaching the required number of points in the task. We informed participants either that pitch identification is an innate ability and cannot be improved through practices, or that it can be improved through effort. We also manipulated their perceived stage in the pursuit by providing feedback on their accumulated points. We measured participants' mental representations of their specific progress level in percentages, as well as their subsequent effort in the task.

METHOD

Participants. A total of 123 undergraduate students (60 men, 63 women) at the University of Texas at Austin participated in the study for partial course credit.

Procedure. The study used a 2 (stage in the pursuit: initial vs. advanced) × 2 (self-regulation effectiveness: effective vs. ineffective) between-subjects design. Upon arriving at the lab, participants were told that researchers were studying how people differentiate pitches of sound. Participants were asked to complete a few separate pitch-identification tasks. Each task asked them to first listen to 10 different pitches, ranging from Level 1 (lowest) to Level 10 (highest), and then to correctly identify the level of pitches in the question section. We also offered a performance bonus and told participants that they would earn points based on how close their answers were to the correct ones. If they could reach more than 23,900 points at the end of two pitch-identification tasks, they would receive an additional $20 for their performance.

After the instruction, participants commenced the task and were first shown an information page that explained the nature of the pitch-identification task. The information indicated that: "Our ears have thousands of ciliated cells with different sensitivities. These cells identify the frequencies that make up a particular pitch, as well as the spectrum of different frequencies that blend together." In the self-regulation effective conditions, participants then read that they could improve their abilities in identifying a specific pitch through learning and familiarizing the ears with that pitch; that is, they could prepare their ears to "capture" certain pitches through repeatedly exposing their ears to that pitch. In the self-regulation ineffective conditions, participants read that the sensitivity of the ciliated cells is genetically determined, and that some people are better at identifying higher pitches, whereas others are better at lower pitches. It was further emphasized that the genetic nature meant that one's sensitivity to given pitches does not change, nor will it be influenced by learning or effort.

After the information page, participants put on their headsets and started the first task. They listened to the 10 pitches (from Level 1 to Level 10) as paced by the program, and then answered 20 pitch-identification questions by indicating the level of the pitch played in each question on a 10-point scale. After completing this task, a pop-up box informed participants that the computer would now calculate their current scores and provide some feedback. We manipulated the stage in goal pursuit by changing the amount of progress that participants had achieved on the task: Participants in the initial-stage conditions were told that they had earned 7,966 points thus far (about one-third of the total points needed for the reward), whereas participants in the advanced-stage

conditions were told that they had earned 15,932 points (about two-thirds of the total points needed for the reward). Similar to the previous study, because participants were not given information on the total number of questions in the task nor the point structure of each question, the feedback on their current scores merely indicated their current progress level rather than providing information on the difficulty of the task or on their relative ability/performance. In addition, the questions inserted at the end of the study showed that there was no significant difference between the initial-stage and the advanced-stage conditions in participants' perceived difficulty of the task ($F(1, 119) = 1.52$, *ns*) and their perceived ability to succeed ($F(1, 119) = 2.23$, *ns*).

After receiving the feedback, participants proceeded to the second pitch-identification task. For this task, we told participants that they could rewind the sound clip as many times as they wished and that they could spend as much time as they wanted listening to the 10 pitches before moving on to the question section. We also reminded participants that they would need 23,900 points for the $20 prize.

Right before this second task began, a few questions appeared in a pop-up box and asked participants to "evaluate the design of the experiment" before moving on. Among a number of filler questions, we asked participants to report their progress so far: "Without calculating, what percentage of points do you think you have earned so far toward the points required for the reward (please enter an estimate between 0% and 100%)?" After participants answered these questions, they started the second pitch-identification task. We recorded the amount of time that participants spent on listening to these pitches before clicking "Continue" to load the question section as the indicator of

their motivation for achieving better performance in this task. Upon finishing this task, participants were told that they had completed the study and were thanked and debriefed. No participant raised any suspicions about the task or about the feedback they had received during the task.

RESULTS AND DISCUSSION

Mental representation of specific progress level. We submitted participants' reported progress to a 2 (stage in the pursuit: initial vs. advanced) × 2 (self-regulation effectiveness: effective vs. ineffective) factoral ANOVA. Consistent with prior findings, the analysis first yielded a main effect of the stage in the pursuit, $F(1, 119) = 231.68$, $p < .01$, indicating that participants who were told that they had earned 15,932 points felt that they had made more progress ($M = 60.59$, $SD = 11.43$) than those who had earned 7,966 points ($M = 31.03$, $SD = 10.76$). More importantly, the analysis yielded the predicted Stage in the Pursuit × Self-Regulation Effectiveness interaction, $F(1, 119) = 9.00$, $p < .01$. Subsequent contrast analyses revealed that among the participants at initial stages of pursuit, those who believed that the performance in the task depended on their effort felt that they had made more progress ($M = 33.97$, $SD = 10.17$), compared with those who thought that the ability of pitch identification was genetically determined and could not be improved by effort ($M = 28.00$, $SD = 10.67$), $t(57) = -2.20$, $p < .05$. In contrast, among the participants who thought that they had made substantial progress on the goal, those who believed that the performance depended on their effort reported less progress

(M = 57.81, SD = 10.41) than those who thought the ability of pitch identification could not be improved by effort (M = 63.55, SD = 11.88), $t(62) = 2.06$, $p < .05$ (see Figure 12).

Motivation. We then examined how the factors of self-regulation effectiveness, stage in the pursuit, and people's estimated specific progress levels, together, influenced participants' subsequent effort in the pursuit (i.e., the time that participants spent on listening to the pitches in the second task before entering the question section). Specifically, we regressed this motivation measure on the self-regulation effectiveness, stage in the pursuit, estimated progress, and all the interaction terms. The analysis yielded a main effect of self-regulation effectiveness, B = .85, $t(115) = 6.90$, $p < .01$, a stage in the pursuit × mental representation of specific progress level interaction, B = - .59, $t(115) = - 4.72$, $p < .01$, and more importantly, a significant Self-Regulation Effectiveness × Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - .73, $t(115) = - 5.85$, $p < .01$. To further examine this three-way interaction, we then regressed the motivation measure on the stage in the pursuit, mental representation of specific progress level, and their interaction term, for self-regulation effective and self-regulation ineffective conditions, respectively. The results showed that, when effort was perceived to be effective, there was a significant Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - 1.31, $t(59) = - 6.38$, $p < .01$, suggesting that the effect of estimated progress on people's motivation depended on their current stage in the pursuit. Further analyses showed that, when participants thought that they were at initial stages of pursuit and that effort was effective in improving their performance, the reported progress positively predicted their subsequent effort in

repeatedly listening to pitches, B = .70, $t(28) = 5.24$, $p < .01$; those who reported greater progress tended to invest more effort. Conversely, for those who thought that they were approaching the end point and that effort was effective in improving their performance, the reported progress negatively predicted their subsequent effort in practicing, B = – .57, $t(31) = -3.81$, $p < .01$; those who reported less progress invested more effort. In contrast, for participants who were led to believe that their performance in pitch identification could not be improved through effort, the stage in the pursuit × mental representation of specific progress level interaction term was not significant, B = .14, $t(56) = .99$, *ns*, and participants' reported progress did not predict their subsequent effort in practicing, regardless of whether they were at initial (B = – .07, $t(27) = -.36$, *ns*) or advanced (B = .21, $t(29) = 1.17$, *ns*) stage of the pursuit.

Moderated mediation model. We then tested the relationships among all factors through a moderated mediation analysis (Preacher, Rucker, & Hayes, 2007, Model 5) with a bootstrapping procedure that generated a sample size of 5,000. The first part of this model regressed participants' mental representation of specific progress level on self-regulation effectiveness, stage in the pursuit, and their interaction term. The result showed a main effect of stage, B = .80, $t(123) = 15.22$, $p < .01$, such that people in the advanced stages of pursuit estimated greater progress than those in the initial stages, qualified by the Stage in the Pursuit × Self-Regulation Effectiveness interaction, B = -.16, $t(123) = -3.00$, $p < .01$, suggesting that the impact of self-regulation effectiveness on mental representation of specific progress level depended on people's current stage in the pursuit (see Figure 6). The second part of the model, which regressed participants' effort

investment on their mental representation of specific progress level, stage in the pursuit, self-regulation effectiveness, the interaction between stage in the pursuit and self-regulation effectiveness, and the interaction between stage in the pursuit and mental representation of specific progress level, yielded a main effect of self-regulation effectiveness, B = .27, $t(123) = 3.29$, $p < .01$, and more importantly, a significant Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - .54, $t(123) = -3.87$, $p < .01$; the result suggested that it is people's mental representation of specific progress level that determined their motivation, and this relationship is moderated by their current stage in the pursuit (see Figure 13).

These results further support the proposition that people use their mental representation of specific progress level strategically as a self-regulatory mechanism to motivate themselves, and that they do so only when they believe that effort would be effective in helping them attain the goal. These results help to rule out the possibility that the mental representation of progress was a consequence of pure cognitive biases. By demonstrating that the phenomenon occurs only when efforts are perceived to be effective in goal attainment, we offer evidence for the self-regulatory nature of this operation.

Based on our proposed mechanism, people strategically alter their mental representations of goal progress to maintain high levels of motivation. One unresolved issue is whether the motivation to accurately assess goal progress would help or hinder one’s subseuqent motivation in goal pursuit. We expect that self-regulation biases in progress assessment will be more likely to occur when accuracy motivation is low; when

the accuracy motivation for the representation is high, people would be less likely to systematically bias their progress estimates. Ironically, this absence of bias among high accuracy individuals is expected to dampen their subsequent motivation, as it removes an important self-regulation instrument. We tested this hypothesis in the next study.

Chapter 12: Study 4 – Accuracy Goal

In this final study, we tested the moderating effect of accuracy motivation on biased mental representation of goal progress level. We expect that individuals who have lower accuracy motivations will be more likely to exhibit self-regulation driven biases in their representations of specific progress level and, as a result, become more motivated in pursing the goal than those who aim to be accurate in their goal progress mental representations.

METHOD

Participants. A total of 173 undergraduate students (95 men, 78 women) at the University of Texas at Austin participated in the study in exchange for compensation of $5.

Procedure. The study used a 2 (stage in the pursuit: initial vs. advanced) × 2 (importance of accuracy: low vs. high) between-subjects design. When participants arrived at the lab, they were informed that researchers were interested in people's cognitive processes—how people identify and differentiate objects. Participants were told that they would view five sets of pictures and identify the differences within each set. Specifically, they would view Picture A in the set first, for as long as they would like to. When they clicked "Continue" to move on, Picture A would disappear and Picture B, which was slightly different from Picture A, would appear. They would then be asked to identify the differences between the two pictures by clicking on the different parts in Picture B. When they correctly identified the differences, they would earn points, and the

points they earned would be reflected in the progress bar on the screen; anchored from 0 to 500 points. Participants further read that, if they reached 500 points at the end of five sets of pictures, they would win a bonus cash prize of $30 on top of their $5 compensation. We set the reward at $30 to ensure that the goal was valuable to all participants in the study.

Participants then commenced the task. In the initial-stage conditions, participants completed one set of pictures and about 1/5 of the progress bar was filled. In the advanced-stage conditions, participants completed four sets of pictures, and the red filling in the progress bar increased as they moved on in the task; 4/5 of the progress bar was filled after participants completed the 4th set. In both conditions, the difficulty of the task and participants' ability/performance should be perceived as the same; the only thing that differed was their current stage in the pursuit.

Participants then encountered an instruction page, either after the 1st set or the 4th set of pictures, depending on condition. Specifically, the instruction informed participants that, before they moved on to the next set, we would like to ask them to answer a few questions about the task they were completing. Here we manipulated the importance of accuracy: While those in the low-accuracy conditions read that the researchers were planning to have a large number of participants for the study, and therefore a rough estimate from each of them would be sufficient, those in the high-accuracy conditions read that as a result of budget constraints, the researchers could run only a limited number of participants for the study, and thus they should try to be as accurate as possible in their

responses, avoiding both overestimation and underestimation (Neuberg, 1989; Zhang & Fishbach, 2010).

Participants then entered the question section, and were asked to make estimates about the task. Among filler questions, we asked participants to estimate (based on the progress bar they saw earlier) how many points they thought they had earned so far out of the total of 500 points; participants typed a number between 0 and 500 in a textbox. Following the estimates, we also asked participants to indicate how likely they thought they would win the $30 bonus cash in the task (7-point scale; 1 = *Not at all* and 7 = *Very likely*), as well as how hard they thought they needed to work to earn the remaining points for the $30 prize (1 = *No need to work at all* and 7 = *Work very hard*).

After completing these questions, participants continued with the task and were again reminded that they could look at Picture A for as long as they wanted to. We recorded how much time participants spent observing Picture A in this new set (after they provided estimates for their current progress) as a proxy for their motivation. All participants completed the task, were debriefed, and all were entered in the drawing for the cash rewards.

RESULTS AND DISCUSSION

Mental representation of progress level. We submitted the points participants estimated that they had earned in the task to a 2 (stage in the pursuit: initial vs. advanced) × 2 (importance of accuracy: low vs. high) factoral ANOVA. The analysis first showed a main effect of stage in the pursuit, $F(1, 169) = 283.11$, $p < .01$, such that those in the

advanced stages reported to have received more points in the task (M = 395.87, SD = 60.50) than those in the initial stages (M = 161.13, SD = 119.26). There was also a main effect of accuracy, $F(1, 169) = 4.82$, $p < .05$, such that those in the low-accuracy conditions estimated more points (M = 305.34, SD = 137.38) than those in the high-accuracy conditions (M = 253.02, SD = 158.84). More importantly, these main effects were qualified by the expected Stage in the Pursuit × Accuracy interaction, $F(1, 169) = 20.78$, $p < .01$. Among the participants who completed one set of pictures and were at the initial stage of pursuit, those who were not asked to be accurate in their estimations reported to have earned more points (M = 213.86, SD = 149.26), compared with those who were trying to be accurate (M = 122.10, SD = 70.28), $t(85) = 3.82$, $p < .01$. In contrast, among the participants who have completed four sets of pictures and were at the advanced stage of pursuit, those who were not asked to be accurate reported having earned less points (M = 380.56, SD = 60.77), compared with those trying to be accurate (M = 412.68, SD = 56.23), $t(84) = - 2.54$, $p < .05$ (see Figure 14).

Different concerns in goal pursuit. We further performed a 2 (stage in the pursuit: initial vs. advanced) × 2 (importance of accuracy: low vs. high) factoral ANOVA on participants' perceived attainability of the goal as well as on their concern for discrepancy reduction. The analysis on the likelihood of attaining the goal showed a main effect of stage, $F(1, 169) = 58.90$, $p < .01$, such that those in the advanced stages thought they were more likely to attain the goal (M = 5.13, SD = 1.18) than those in the initial stages (M = 3.47, SD = 1.57). The main effect was qualified by the hypothesized Stage in the Pursuit × Accuracy interaction, $F(1, 169) = 6.97$, $p < .01$. For the participants who

had just started the pursuit, those in the low-accuracy condition thought that the bonus cash was more likely to be attained ($M = 4.00$, $SD = 1.76$) than those in the high-accuracy condition ($M = 3.08$, $SD = 1.29$), $t(85) = 2.81$, $p < .01$, and the estimated progress level predicted their perceived chance of attaining the goal in the end, B = .007, $t(85) = 5.48$, $p < .01$. In contrast, neither the difference in the chance of attaining the goal, nor the correlation, existed among participants who were approaching the end point of the pursuit ($M_{low\text{-}accuracy} = 5.04$, $SD = 1.02$ vs. $M_{high\text{-}accuracy} = 5.22$, $SD = 1.33$, *ns*). These results provided evidence that people who were not concerned about the accuracy in estimates exaggerated their progress level at the initial stages to signal higher goal attainability, and they did not do so in more advanced stages in which the goal attainability was relatively secured.

We conducted the same analyses on people's concern about additional effort investment to reduce the remaining discrepancy. The 2 (stage in the pursuit: initial vs. advanced) × 2 (importance of accuracy: low vs. high) factoral ANOVA showed the hypothesized Stage in the Pursuit × Accuracy interaction, $F(1, 169) = 7.72$, $p < .01$. There was no main effect in this analysis. Subsequent analyses showed that among participants who were approaching the end point of the pursuit, those in the low-accuracy condition reported a greater need for extra effort to earn the remaining points ($M = 6.16$, $SD = 1.02$) than those in the high-accuracy condition ($M = 5.46$, $SD = 1.29$), $t(84) = 2.78$, $p < .01$, and the estimated progress level negatively predicted how much effort they thought they would need to reach the goal, B = - .005, $t(84) = - 2.57$, $p = .01$. In contrast, among the participants in the initial stage of the pursuit, this variable did not differ between the two

accuracy conditions, ($M_{low\text{-}accuracy}$ = 5.46, SD = 1.02 vs. $M_{High\text{-}accuracy}$ = 5.76, SD = 1.29, ns), nor did we find the correlation between the progress level and the expectation of additional effort.

Motivation. What happens to individuals' motivation when they try to be accurate in estimates? We performed a regression analysis on the time participants spent on trying to memorize Picture A after estimating their progress, using accuracy, stage in the pursuit, estimated progress, and all the interaction terms as predictors. The analysis yielded a main effect of accuracy, B = - .19, t(165) = - 2.59, p = .01, a stage in the pursuit × mental representation of specific progress level interaction, B = - .27, t(165) = - 3.37, p < .01, and the hypothesized Accuracy × Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = .21, t(165) = 2.60, p = .01. To further examine the three-way interaction, we regressed the motivation measure on the stage in the pursuit, mental representation of specific progress level, and their interaction term, for low-accuracy and high-accuracy conditions, respectively. The results showed that, when accuracy was not important, there was a significant Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - .48, t(78) = - 4.46, p < .01, suggesting that the effect of estimated progress on people's motivation depended on their current stage in the pursuit. Further analyses showed that, among participants who were not instructed to be accurate with their estimates, the reported progress positively predicted their subsequent effort in observing Picture A at the initial stage of the pursuit, B = .43, t(35) = 2.80, p < .01, but negatively predicted their subsequent effort at the advanced stage, B = – .47, t(43) = – 3.49, p < .01. This relationship, again, was not

observed among participants who were asked to provide accurate estimates: the stage in the pursuit × mental representation of specific progress level interaction term was not a significant predictor, B = - .06, $t(87) = -.59$, *ns*, and the reported progress did not predict participants' subsequent effort, regardless of whether they were at the initial (B = .21, $t(48) = 1.45$, *ns*) or advanced (B = .16, $t(39) = 1.01$, *ns*) stage of the pursuit.

Moderated mediation model. We then tested the relationships among all factors through a moderated mediation analysis (Preacher, Rucker, & Hayes, 2007, Model 5) with a bootstrapping procedure that generated a sample size of 5,000. The first part of this model regressed participants' mental representation of specific progress level on the importance of accuracy, stage in the pursuit, and their interaction term. The result showed the hypothesized Stage in the Pursuit × Accuracy interaction, B = .33, $t(173) = 4.48$, $p < .01$, suggesting that the impact of the importance of accuracy on mental representation of specific progress level depended on people's current stage in the pursuit (see Figure 8). The second part of the model, which regressed participants' effort investment on their mental representation of specific progress level, stage in the pursuit, importance of accuracy, the interaction between stage in the pursuit and accuracy, and the interaction between stage in the pursuit and mental representation of specific progress level, yielded the hypothesized Stage in the Pursuit × Mental Representation of Specific Progress Level interaction, B = - .31, $t(173) = -4.20$, $p < .01$; the result suggested that it is people's mental representation of specific progress level that determined their motivation, and this relationship is moderated by their current stage in the pursuit (see Figure 15).

Results in Study 4 provided critical support for our hypothesis that people alter their mental representations of goal progress as a self-regulation mechanism to elicit greater effort in the pursuit. When accuracy in estimates is important, this operation ceases and people's mental representations do not show systematic biases, which, ironically, had a negative impact on their subsequent effort. In addition, we explored the mechanism through which the distortions influence motivation: While the inflated progress level at the initial stages increases motivation by enhancing the perceived goal attainability, the downplayed progress level at the advanced stages increases motivation by highlighting the need for extra effort. Importantly, by showing that a desire to be accurate can eliminate the systematic biases in the representations, we were able to further confirm that these alterations, instead of being attention-based biases, are indeed self-regulatory instruments designed to help ensure successful goal attainment.

Chapter 13: General Discussion

Past research has emphasized the impact of progress feedback on people's subsequent motivation in goal pursuit (Förster, Higgins, & Chen Idson, 1998; Hull, 1932; Liberman & Förster, 2008; Louro, Pieters, & Zeelenberg, 2007). The present investigation extends the previous findings and focuses on one's mental representation of specific progress levels as a determinant of motivation. By taking a motivational approach, we find that mental representations of goal progress can function as a self-regulation mechanism that helps people maintain high levels of motivation in goal pursuit. While people exaggerate their specific progress level to increase perceived goal attainability at initial stages of pursuit to elicit greater motivation, they downplay the specific progress level to highlight the need for greater effort at advanced stages of goal pursuit to elicit greater motivation.

The results of four studies provided convergent support for the proposed mechanism. Study 1 tested our hypothesis in the context of a collective donation goal pursuit. We found that when the donation cause was highly (vs. less) valuable, people exaggerated the progress that had been made on the goal above the baseline condition to signal higher goal attainability in initial stages of the pursuit, but conversely downplayed the level of progress below the baseline condition to signal a higher need for additional effort in advanced stages of the pursuit. Such alterations in mental representations, in turn, impacted people's subsequent motivation in contributing to the collective goal. In an individual goal context, Study 2 found that participants who were starting to accumulate

points for a reward reported greater achieved progress when the reward was of high (vs. low) value to them, which subsequently led to greater effort in the task. Conversely, participants who were approaching the total points required for the reward reported less progress when the reward was of high (vs. low) value to them, which also resulted in increased effort in further pursuit.

In Study 3, we found that such alteration of progress occurred only when self-regulation was perceived to be effective and necessary in helping one attain the goal; participants who thought they could (vs. could not) improve their performance through practice in a pitch-identification task estimated greater achieved progress when they had just started accumulating points, but reported less progress when they were approaching the total points required for reward. Their altered mental representations of specific progress levels, in turn, predicted their subsequent motivation. Lastly, Study 4 provided further evidence for the self-regulatory nature of the observed phenomenon by showing that participants who were trying to be accurate with their estimates did not alter their mental representations, and their motivation, in turn, suffered compared with those who were less concerned about the accuracy and hence altered their mental representations as a motivational instrument. Importantly, because the participants who were concerned about accuracy would monitor their progress as (if not more) intensely and closely as those who were not concerned about accuracy, this study also ruled out the possibility that the observed alteration of mental representation was a result of more intense monitoring of one's progress.

Implications for Other Research

If we view the process of goal pursuit as moving along a straight line anchored by the starting point on one end and the ideal state on the other, progress and the remaining discrepancy to attainment would represent two opposing sides of the same construct: While progress represents how much one has accomplished from the starting point, discrepancy represents the distance one still needs to cover to reach the end point. Prior research has found evidence that both accomplished and unaccomplished goal progress can be motivating: On one hand, people are motivated by negative feedback that is based on the discrepancies to goal attainment (Carver & Scheier, 1998; Higgins, 1987; Locke & Latham, 2002); on the other hand, one's achieved progress also motivates effort by signaling greater chance of goal attainment (Liberman & Förster, 2008). The present framework unites the two streams of literature by adding a temporal dimension and suggests that people derive motivation from different sources at different stages of goal pursuit: While they are mostly concerned about goal attainability and are more motivated by the achieved progress in the initial stages of goal pursuit, they become mostly concerned about reducing the discrepancy and are more motivated by the unachieved progress in advanced stages of goal pursuit.

At the center of this dual-source view is the level of progress on a goal, which addresses both concerns in goal pursuit. The present research analyzes people's tendencies to use the mental representation of their progress level as a self-regulatory instrument. By strategically biasing the representations of their progress levels on the

goal, they either enhance the goal commitment or highlight the magnitude of discrepancy, so that their motivation remains high throughout the entire pursuit.

Past research has documented various instruments that people employ to prevent obstacles from undermining their goal attainment. They can modulate the choice situations (Ainslie, 1975; Becker, 1960; Green & Rachlin, 1996; Rachlin & Green, 1972; Schelling, 1978, 1984; Thaler, 1991; Thaler & Shefrin, 1981), change the value of different options in conflicts (Fishbach, Zhang, & Trope, 2010; Kuhl, 1986; Myrseth, Fishbach, & Trope, 2009), or shift the level of abstraction of the available options (Fujita et al., 2006; Mischel & Ayduk, 2004). The present investigation extends this research stream from single-choice situations to goal pursuit that requires continued efforts, and demonstrates that people in these contexts modify the mental representation of their achievement as an instrument to ensure goal attainment. These strategic alterations, as we demonstrate in the present research, are in operation whenever the attainment of an important goal is at stake and, unlike in previous studies, do not require the presence of an immediate self-control conflict to be triggered.

The finding that people strategically modify their mental representations of achieved progress to elicit greater motivation further contributes to the discussion on the interaction between motivation and cognition. Rather than always representing the world accurately in their minds, people's cognitions—including evaluations of other people, estimated likelihood of an event, and interpretations of ambiguous stimuli—are often influenced by their momentary motivations (Balcetis & Dunning, 2006; Dunning, 2001; Kunda, 1990). Extending these findings, we have demonstrated a productive motivation-

cognition cycle of reinforcement in goal pursuit: Individuals' motivation to ensure the completion of important goals initiates the operation that biases their cognition (exaggerating or downplaying achieved progress), which in turn comes back to exert further positive influence on their motivation to attain the goal. This cycle of reinforcement further highlights the intertwined relationship between motivation and cognition and sheds light on our understanding of the interaction between the two.

Related Conceptualizations

We posit that the biases in mental representation reflect a motivational, self-regulatory mechanism that individuals use to elicit greater motivation. Alternatively, they might also reflect other cognitive biases that are non-motivational in nature. For example, the optimism bias (Taylor & Brown, 1988) represents one's unrealistic expectation of greater success in the future than what a person actually achieved during a comparable period in the past. Optimism bias suggests that holding optimistic expectations about the future can enhance one's feelings of self-efficacy and can increase one's motivation to attain the goal by functioning as more challenging performance standards to elicit greater efforts (Ajzen, 1985; Armor & Taylor, 2002; Bandura, 1997; Buehler, Griffin, & Ross, 1994; Gollwitzer, 1990; Oettingen & Mayer, 2002). Similarly, defensive pessimism (e.g., Norem & Cantor, 1986; Norem & Illingworth, 1993; Showers, 1992) suggests that when anticipating difficulties in goal pursuit, people sometimes set unrealistically low expectations in order to help manage their emotional experiences in case of failure, and to motivate greater effort. According to this account, it is possible that people might have

been downplaying their progress so that they could better prepare themselves for the potential failures and the emotional consequences. Notably, both the optimism and defensive pessimism would predict that such biases should occur for goals that are both within and outside their control; for instance, people exercising defensive pessimism would think through various possible outcomes (usually worse-case scenarios) of an event, whether it is a performance (within their control) or a situation (outside their control), to help manage their anxiety level (Norem & Illingworth, 1993). That is, people display optimism and defensive pessimism regardless of their perceived level of control in the pursuit of the goal.

Our empirical evidence, however, supports the self-regulatory nature of the biases in the mental representation of goal progress by showing that this phenomenon occurs only when people feel that efforts are instrumental in helping them attain the goal. Whenever the outcome of a goal pursuit is found to be outside of people's personal control (e.g., genetically determined in Study 3), their mental representations of specific progress level do not display the same systematic bias, nor do these representations predict people's subsequent efforts in the pursuit. Therefore, mere optimism or pessimism cannot account for our findings. Instead, this pattern is more consistent with a counteractive self-regulation conceptualization, which emphasizes the instrumental nature of such representations. Because efforts are not instrumental in helping the attainment of goals that are beyond people's control, people do not engage in self-regulation, and hence the systematic biases in mental representations do not occur.

A Word on Accuracy and Motivation

Biases in perceptions and judgments are generally regarded as undesirable, and much research from decision making as well as from clinical psychology suggest that an accurate perception about one's circumstance is often desirable and provides better directions for people's important decisions (Ambady & Gray, 2002; Fletcher & Kerr, 2010; Funder, 1987; Rule et al., 2008). Indeed, in many situations, people benefit from an accurate representation of the outside world because it allows them to make decisions that are more in line with reality and facilitates human behaviors such as planning and coordination.

Despite all the benefits associated with accuracy in perceptions, it is also important to take notice of the situations in which biases, within reasonable scope, may be instrumental and beneficial. As we demonstrated in the present research (e.g., Study 4), a desire to be accurate in estimates brought about the unintended costs of decreased motivation in goal pursuit; a biased representation, on the other hand, proved to be effective in eliciting greater motivation to ensure the attainment of an important goal. These findings add to the growing evidence that a healthy amount of bias, particularly when it is motivational in nature, can be of positive value (e.g., Taylor & Brown, 1988; Zhang & Fishbach, 2010). Besides an appropriate amount of bias, the timing and direction of the bias are also crucial. For instance, prior research (e.g., Taylor & Gollwitzer, 1995) has found that, while people are motivated to be accurate in their evaluations at the deliberation stage of the pursuit to carefully evaluate the pros and cons of competing goals as well as their own capabilities, people become more biased in their

evaluations at the implementation stage, which helps them to better allocate effort and resources to facilitate the attainment of the chosen goal. Our research sheds light on the direction of beneficial biases after one initiates the pursuit: By altering the mental representation of specific progress levels in distinctive directions at different stages of goal pursuit, people can effectively motivate themselves and increase the likelihood of eventual goal attainment.

Moreover, this benefit of biases can have important implications for social agents who try to motivate other people. Because the use of biased mental representation requires a certain degree of freedom in the representation, frequent feedback could limit the effectiveness of such operations. On the basis of our findings, one should be aware of both the benefits and costs of frequent progress feedback, and the question of how frequent the feedback should be depends on the relative value of the goal and the initial motivation level of the individual. For example, instead of providing frequent progress feedback to all individuals, our findings would suggest that for people who are motivated to pursue the goal, a certain level of ambiguity in progress feedback would facilitate their own self-regulation efforts and allow them to proactively use mental representations to help them attain the goal. In a similar vein, an interesting question is how people strategically balance between the use of precise information and self-regulatory instruments that require a certain degree of ambiguity. When precise feedback on goal progress is easily accessible, would people strategically forgo, avoid, or suppress such feedback so that they could employ their own self-regulatory tactics? How often, for example, would an everyday runner seek information on the distance covered or calories

burned from monitoring gadgets/devices, and would this frequency change as this person gets closer to the end point of the pursuit? Further investigations on these questions would be an interesting avenue for future research.

SECTION 3: FRIEND OR FOE? THE DYNAMICS OF INTERPERSONAL RELATIONSHIPS IN GOAL PURSUIT

Introduction

All of us are pursuing important goals in our lives; the pursuit of goals such as a higher degree, better health, or other personal desires drives our consumption behaviors. For example, people purchase memberships in fitness programs to help them achieve a weight-loss goal, and participate in different kinds of loyalty programs to win rewards. Interestingly, we often are not alone in the pursuit of these goals. We may know a few friends who are also trying to lose weight, and we may have a few neighbors who are also trying to collect loyalty stamps at a nearby coffee shop to redeem for a free bag of coffee beans. How, then, do we see these people who are pursuing the same goal as us? Do we see them as partners and seek companionship from them, or conversely view them as competition and thus distance ourselves from them, even though the attainment of the goal is available for everyone (e.g., everyone can lose weight, and everyone can redeem for a free bag of coffee beans)? Consequently, how willing are we to share helpful tips to assist others in their pursuit? Does this pattern remain the same throughout the entire course of goal pursuit, or does it change at one point?

These research questions are important for several reasons. From the consumers' perspective, helping others in their pursuit could enhance one's own confidence and

motivation in his/her own pursuit. On a collective level, the sharing of helpful tips facilitates knowledge exchange and collective wisdom among those who are working on the same goal, leading to greater joint welfare. From the marketers' perspective, consumers' autonomous information-sharing behaviors can help to generate word-of-mouth and serve as a free, yet credible, advertisement to further promote their products and services (Phelps, Lewis, and Mobilio 2004; Liu 2006). In addition, marketers have designed various programs for consumers to join force to pursue similar, individual goals together (e.g., Weight Watchers, AA, quit-smoking programs), under the assumption that these consumers would remain close to each other and facilitate others' pursuit. Therefore, it is important for us to examine how consumers really perceive and interact with others who are pursuing the same goal.

Specifically, this paper examines how people's perceived closeness with others, who are in the same pursuit (i.e., pursuing the same goal and are in the same stage of pursuit), may change during the course of goal pursuit. We built on the research of the interpersonal relationships in self-regulation processes (e.g., Fitzsimons and Finkel 2010), and propose that consumers either see others in the same pursuit as "friends" to seek companionship from them, or see them as "foes" and seek to reduce the remaining discrepancy more efficiently than others to reach the goal sooner; such shift of relationship has many behavioral consequences, including whether consumers share helpful, goal-related information with others. We also identified two factors that lead to this shift of closeness, including the stage consumers are in during their own pursuit (Huang and Zhang 2011), and consumers' inherent zero-sum belief (Crocker and

Canevello 2008).

We organize the remainder of the article as follows: We review research that leads to our prediction that people's perceived closeness with others changes during the course of goal pursuit, as well as its implications on their information-sharing behaviors. We then test this hypothesis in one longitudinal field study, three experiments, and one qualitative field study. We conclude by addressing the theoretical contributions of these findings for understanding the dynamics of interpersonal relationships in goal pursuit, and the implications for managerial practices.

Chapter 14: Literature Review

Interpersonal Relationships in Self-Regulation Processes

Prior research has provided evidence on how interpersonal relationships can influence self-regulation processes (for review, see Fitzsimons and Finkel 2010). For instance, the mere presence of significant partners can make the related goals more accessible, and thus trigger the pursuit on a nonconscious level (Fitzsimons and Bargh 2003). Interpersonal relationships can also deplete or bolster our resources for self-regulation (Ackerman, Goldstein, Shapiro, and Bargh 2009; Knowles, Finkel, and Williams 2007), and provide social support to facilitate the pursuit (Uchino 2004). In addition, it has been found that people take active roles in managing their interpersonal relationships to ensure successful goal attainment. For example, people automatically bring to mind, and become closer to, others who can help them make further progress on the goal (i.e., instrumental others) when a goal is active (Fitzsimons and Shah 2008) and when significant progress has not been made on a goal (Fitzsimons and Fishbach 2010).

While the majority of research on interpersonal relationships in self-regulation processes focuses on the impact of socially close others, such as one's parents, a good friend, or a romantic partner, relatively little research has investigated the impact that the people who are in the same goal pursuit may have on each other. For one thing, seeing others pursue a goal would remind and activate the same goal in one's association network, consequently leading one to initiate the same pursuit (i.e., Goal Contagion Effect by Aarts, Gollwitzer, and Hassin 2004). Interestingly, the extent of this contagion

effect is proportional to the perceived effort in others' pursuits, such that the more effort others invest in the pursuit, the higher the accessibility of the goal and thus the more motivated one becomes in one's own pursuit (Dik and Aarts 2007). In addition to initiating the pursuit, one can also vicariously complete the pursuit by observing others completing their goal pursuits (McCulloch, Fitzsimons, Chua, and Albarracín 2011).

However, besides mimicking others' goal pursuit processes, it is unclear how people actually *perceive* and *interact* with others who are in the same pursuit as themselves (i.e., pursuing the same goal and are in the same stage of pursuit). In particular, when everyone is trying to advance toward the same goal, and the attainment of the goal is available for everyone, do they see each other as friends, or foes? Consequently, do they share goal-related information to help others in their pursuit, or do they keep the helpful tips to themselves?

OTHERS IN THE SAME PURSUIT – FRIEND OR FOE?

Friend for companionship. When people pursue the same goal and are in the same stage of pursuit (e.g., aiming to lose 20 pounds of weight), they are striving for the same ultimate end-state (e.g., a fitter self), and such shared similarity could create a sense of companionship and draw them closer to each other ("we are in the same boat!"). Indeed, as suggested by prior literature, similarity between individuals leads to greater interpersonal attraction, trust, and understanding, and people tend to affiliate with others who share similar interests, have a similar social status, or are in a similar situation (Cohen and Zhou 1991; Ruef, Aldrich, and Carter 2003; Makela, Kalla, and Piekkari

2007; Schacter 1959). In addition, similarity can be a base for people to form psychological group/category in their minds, generating a strong sense of identification with similar others (Self-Categorization Theory, Williams and O'Reilly 1998; Monge and Contractor 2003). Therefore, people should feel similar and close to others in the same goal pursuit.

When people feel close to and seek companionship from others who are pursuing the same goal, they should be more willing to help others in their pursuits. In deed, there is abundant evidence that people are more favorable and helpful toward similar others (e.g., Singh and Tan 1992; Byrne and Nelson 1964). For example, clerks approve a greater amount of loan to applicants who hold similar attitudes and values as them (Golightly, Huffman, and Byrne 1972), and people in general are more altruistic and willing to make a greater monetary investment to help socially close others (Rachlin and Jones 2008). Even when the sense of similarity is built on a less profound reason, such as having the same surname or wearing similar apparel, it can still lead to greater likelihood to help (Keasey and Keasey 1971; Guéguen, Pichot, and Dreff 2005).

Such willingness to help others in the same pursuit can be displayed through various behaviors, including the sharing of helpful goal-related information (e.g., sharing dieting tips to others who are also trying to lose weight). That is, consumers who are working on the same goal and see each other as friends should be more willing to share goal-related information, to help each other in the pursuit. For instance, in the business-to-business context, it has been found that companies are more likely to share knowledge when they have encountered similar problems in the past and have similar experiences

(Cohen and Levinthal 1990; Ounjian and Bryan 1987). Therefore, it is plausible to propose that consumers would see others in the same pursuit as friends to seek companionship from them, and such perceived closeness will also lead them to share more helpful, goal-related information with each other.

Foe to compete against. On the other hand, people could also see others in the same pursuit as competition, which results in distancing (vs. close companionship) from each other. As prior research shows, people conduct social comparisons as they encounter other people; that is, we view others as performance benchmarks that we would like to exceed (Festinger 1954). As a result, knowing that one is performing better or worse than others can lead to various distinctive effects on one's emotions and motivation (Festinger 1954; Blanton 2001; Buunk and Gibbons 2007). Such desire to compare exists in many species and has evolutionary value, because it serves as an adaptive mechanism for sizing up one's competition (Gilbert, Price, and Allan 1995).

Even though the desire to compare and compete could manifest in many domains of our lives and could be practiced on various targets, people do not compete to the same degree against everyone, in every domain. Specifically, Tesser's (1988) Self-Evaluation Maintenance Model (SEM model) proposes that when the domain is self-relevant, people are more likely to compare and feel threatened by others' performance. When one decides to pursue a goal, the domain of the pursuit should already be seen as self-relevant and important in one's eyes; therefore, it is likely that one would intensely monitor and compare one's progress against others' progress during the pursuit of this important goal. In addition, because similar others provide a meaningful standard for self-evaluation

(Festinger 1954), prior literature has also suggested that people compare more with similar others under stress (Schachter 1959; Gerard and Rabbie 1961), such as in the work environment, in marriages, and in hospital settings (Buunk, Schaufeli, and Ybema 1994; Bunk, VanYperen, Tayler, and Collins 1991; Kulik and Mahler 2000). Likewise, people tend to compare and compete with others who are expected to perform at about the same level as themselves (Goethals and Darley 1977; Wheeler and Zuckerman 1977). Based on these findings, we can derive that the "similar others" in the pursuit of an important goal would likely become the target of comparison and thus competition; specifically, because the people who are in the same situation would provide a meaningful standard for comparison, one should be more likely to compete with their peers who are in the same stage of the same pursuit, such that attaining the goal sooner than them becomes greatly enjoyable, and falling behind is threatening and painful.

Because people could perceive others in the same stage of the pursuit of an important goal as competition, they should then be reluctant to help these peers make further progress on their goals, and thus will not share helpful goal-related information with each other. For instance, prior research has found that similarity between a help giver and a help seeker on an ego-central task -- which is likely to occur in the context of pursuing an important goal -- can pose a threat and thus inhibit helping behaviors (Nadler 1987). Similarly, people give less improvement information to relationally close others (e.g., friends, rather than strangers), to prevent being outperformed by close others when future comparison opportunities arise (Pemberton and Sedikides 2001).

Therefore, while it is plausible to propose that people would view others who are pursuing the same goal and are in the same stage of pursuit as friends, to seek companionship from them and be willing to share goal-related information with them to further facilitate others' pursuits, it is equally plausible to hypothesize the opposite; that is, people would perceive others in the same pursuit as foes, to distance themselves from and thus be reluctant to share goal-related information with them.

A Switch from Friends to Foes – The Examination of Two Factors

Stage in goal pursuit. What, then, decides whether people see others in the same pursuit as friends or foes? We explored two factors in this paper: the stage in goal pursuit and one's zero-sum belief. Based on the theory of dynamics of self-regulation (Fishbach, Zhang, and Koo 2009; Koo and Fishbach 2008) and the findings that people have different concerns as they progress from the initial stage to the advanced stage of goal pursuit (Huang and Zhang 2011; Huang, Zhang, and Broniarczyk 2012), we first theorize that how people view others in the same pursuit will depend on their current stage in the pursuit. That is, depending on whether people have just started to pursue a goal or have made substantial progress and are approaching the end point, they would either view others as companion or as competition.

When people first begin to pursue a goal, they will be concerned about whether the goal is attainable and whether they should commit to this pursuit (Huang and Zhang 2011; Huang, Zhang, and Broniarczyk 2012). As a result, in this early stage of goal pursuit, people are likely to derive motivation based on the expectation that they can

eventually attain the goal (Atkinson 1957; Bandura 1997; Liberman and Förster 2008; Lewin 1951; Locke and Latham 1990). One way for people to enhance the perceived attainability of the goal is to relate to other people who are also pursuing the same goal and are in the same stage of pursuit, because knowing that "we are in the same boat" can signal to oneself that the goal is indeed attainable for most people. As a result, in the initial stage of goal pursuit, one would view others in the same pursuit as "friends," to seek companionship from them and to share goal-related information with them. For example, for a person who just joined the Weight Watchers program and is worried about whether he/she can lose 30 pounds to reach the goal weight, he/she will view other customers in the same stage of the program as companions, because this view would enhance one's belief that losing 30 pounds is indeed possible for everyone in the program. As a result, one should feel close to the customers who are in the same pursuit, and be willing to share dieting tips with each other.

However, once this person has lost a significant amount of weight and is approaching the goal weight, he/she will feel more certain that the goal is indeed attainable through one's own, continued effort. That is, one no longer needs to draw support and companionship from others in the same pursuit. Instead, the focus in this advanced stage of pursuit is to reduce the remaining discrepancy efficiently to attain the goal in a timely manner (Huang and Zhang 2011; Huang, Zhang, and Broniarczyk 2012). Therefore, in this advanced stage of goal pursuit, people derive motivation from the estimate of the remaining discrepancy (Higgins 1987; Koo and Fishbach 2008; Locke and Latham 2002), and mobilize effort based on how much remains to be done to finally

attain the goal (Brehm and Self 1989; Wright and Kirby 2001). Such intense monitoring on one's progress and the remaining discrepancy will lead one to intensely compare one's progress against others' progress, especially those who are in the same stage of pursuit, because these same-stage peers provide a meaningful standard for comparison. As a result, in the advanced stage of goal pursuit, one would be more likely to view others who are in the same pursuit as "foes," to compare and compete against, and seek to make more progress and attain the goal sooner than them; consequently, they will be reluctant to share goal-related information to help others in their pursuit. For example, for a person who has lost a significant amount of weight in the Weight Watchers program and is now focusing on reaching one's goal weight as soon as possible, he/she will view others in the same stage of the program as comparison benchmark and competition, and seek to lose more weight than them every week. As a result of such competition, one would feel more distant from other customers who are in the same pursuit, and be reluctant to share dieting tips to help others lose more weight.

Zero-sum belief. Another important factor that determines this switch from friends to foes as one moves from the initial to the advanced stages of goal pursuit is one's tendency to view goal pursuit as a competition (i.e., one's inherent zero-sum belief). As discussed earlier, many goal pursuit situations are not zero-sum games, in the sense that everyone in the pursuit could eventually reach the end point and enjoy the reward; for example, everyone in the Weight Watchers program could lose 10 pounds of weight, and everyone in the frequent flyer program could earn enough points to redeem for a free flight – reaching the end point earlier than others does not provide extra reward.

Therefore, not every individual would see these joint goal pursuits as contests and seek to win when they reach the advanced stage of the pursuit.

Specifically, based on the research on social comparisons, communal values, and zero-sum belief, we propose that the extent to which people view joint goal pursuits as competitions would decide whether the proposed dynamics (from friends to foes) manifest. For instance, recent research by Locke (2003) has found that communal values would magnify the positive effects of connective comparison (such as helpfulness and mood improvement), but not negative contrastive comparisons, and that people with high communal values would place less importance on vertical (either upward or downward) comparisons. Therefore, for the people who have a low zero-sum belief, they are more likely to view others in the same pursuit as friends and focus on the communal feelings, rather than treating them as comparison benchmarks, and thus would not become competitive against them as they reach the advanced stage of the pursuit.

However, for the people with a high zero-sum belief, they would be more likely to make the hypothesized switch from being friends with same-pursuit peers early on, to becoming foes in the advanced stage of the pursuit – the switch happens when they no longer need to seek companionship to confirm the goal's attainability, and begin to view the same-pursuit peers as comparison benchmarks and seek to "win" the alleged competition. Crocker and Canevello's (2008) research provided support for this notion. They found that people could aim to be compassionate or aim to manage their self-image as they interact with others and build social networks over time; more importantly, it is those who strive to maintain their self-image (vs. be compassionate) that would focus on

their own needs and desires, and thus view social interactions as zero-sum games, such that someone's gain always comes with the other person's lose. That is, although the people with a high zero-sum belief would still draw others close as companions when they are uncertain about the goal's attainability, they are likely to become distant and competitive against the same-pursuit peers once they reach the advanced stage of the pursuit and no longer need the supportive benefits; this is because the same-pursuit peers have become potential threats in this advanced stage of the pursuit, and attaining the goal later than them incurs a lose while faster attainment implies a gain.

Five studies allowed us to monitor how people's perceived closeness with others who were in the same pursuit changed throughout the course of pursuit, as well as how their information sharing behaviors evolved based on the two proposed factors. Specifically, Studies 1a and 1b tested our hypothesis in longitudinal academic goal contexts and demonstrated how people's perceived closeness with others who were pursuing the same academic goal changed from initial stage to the advanced stage of goal pursuit, and how such relationship was different from other types of interpersonal relationships. In Study 2 we directly manipulated the stage of goal pursuit in the lab setting, and measured both people's perceived closeness and their information-sharing behaviors as proxies for the shift of their relationship with others who were pursuing the same goal. Studies 3 and 4 incorporated the second factor of zero-sum belief; while Study 3 tested the interactive impact of the two factors on perceived closeness, Study 4 tested this interactive impact on information-sharing behaviors. In addition, Study 4 directly examined the underlying mechanisms, i.e., drawing others closer to enhance the

perceived goal attainability, and distancing others to treat them as comparison benchmark and competition. Finally, Study 5 externally validated our hypothesized patterns through a real-world, large-scale qualitative field study with the Weight Watchers.

Chapter 15: Study 1a – The Shift of Closeness with Same-pursuit Peers vs. Significant Others

In Study 1a, we tracked students' perceived closeness with two groups of people: their peers in the same academic pursuit and significant others. This study employed a longitudinal academic goal pursuit context and lasted for six weeks, allowing us to capture the natural shifts of interpersonal relationships as the students make more progress toward their academic goal. We hypothesized that people's perceived closeness with same-pursuit peers would naturally decrease (i.e., becoming more distant) as they progressed to the end-point of the pursuit, whereas their perceived closeness with significant others would not show the same negative trend, because significant others were not seen as competition as people reached the advanced stage of goal pursuit.

METHOD

A total of 19 undergraduate students from a southwestern university participated in this study for a coffee-shop gift card. This study used a Stage in the Pursuit (mid-semester (week1) to the end-of-semester (week 6)) × Interpersonal Relationship (same-pursuit peer vs. significant other) design; both the stage in the pursuit and the interpersonal relationship are measured as within-subject variables.

The first part of the study was conducted in the lab around the middle of the semester. The cover story informed participants that the researchers were interested in learning more about their academic goal, academic life and relationships on campus. Participants were first asked to set their academic goal for this semester. The study was

conducted at the middle of the semester (i.e., six weeks before the end of the semester) instead of at the beginning of the semester, to ensure that the academic goal identified by the participants was realistic, because the participants would have a general idea as to how much they could achieve by the end of the semester. After participants set the academic goal, they were asked to report their progress on a scale from 0 to 100 and answered a few filler questions about this goal (e.g., "how important is it for you to do well at this school?").

All participants were then asked to identify a person they knew, who was pursuing a similar academic goal to theirs and was at a similar stage of progress. To make sure that this "same-pursuit peer" stayed concrete in their minds, participants were asked to type down this person's name and provide a short description regarding this person (age, affiliation etc.). Participants were then asked to report their perceived closeness with this person on a 10-point scale (1 = not close at all, 10 = extremely close), embedded among others questions such as their similarity in attitudes and opinions regarding students' benefits on campus. In addition, participants were asked to think of a person they knew, who was not pursuing the same academic goal but facilitated their achievement of their academic goal. To ensure that this "significant other" was concrete in participants' minds, we asked them to type down this person's name and the relationship between the participant and this significant other. Participants were then asked to report their perceived closeness with this significant other on a 10-point scale (1 = not close at all, 10 = extremely close), embedded among others questions such as how long they have known this person.

After reporting these relationships, participants continued with other studies in the lab session, provided their email address, and then left the lab. Five follow-up surveys were emailed to the participants during the five following weeks, one survey per week, from the middle of the semester to the end of the semester. In each follow-up survey, participants were first reminded of the academic goal they set in the lab, and asked to report their current progress on this goal on the same scale from 0 to 100. They were then reminded of the same-stage peer they identified earlier (the name and the description they provided in the first survey), and then asked to report how close they were to this "same-pursuit peer" at the present moment, on the same 10-point scale (1 = not close at all, 10 = extremely close). After a few filler items about their academic life, participants were reminded of the significant other they identified in the first survey (the name and the relationship), and then asked to report how close they were to this person at the present moment on the 10-point scale (1 = not close at all, 10 = extremely close). These follow-up surveys allowed us to track the natural shifts in participants' interpersonal relationships from the mid-point of their academic goal pursuit to the end of the pursuit. After participants completed all five follow-up surveys, they received the coffee-shop gift card at the end of the semester.

RESULTS AND DISCUSSION

As a manipulation check, we first conducted a repeated-measure ANOVA on the progress participants reported they have made on the academic goal during the six-week period, to ensure that participants indeed made more progress as they advanced from the

middle to the end of the semester. The analysis yielded a main effect of the stage in the pursuit, $F(5, 90) = 4.71, p < .01$, such that participants made more progress on the academic goal they set in the lab from week 1 to week 6 ($M_{week1} = 62.0\%, M_{week2} = 70.8\%, M_{week3} = 76.3\%, M_{week4} = 81.5\%, M_{week5} = 78.7\%, M_{week6} = 83.4\%$).

We then conducted the repeated-measure ANOVA on participants' perceived closeness with same-pursuit peers from week 1 to week 6. The analysis yielded a significant effect of the stage in the pursuit, $F(5, 90) = 5.09, p < .01$ ($M_{week1} = 7.16, M_{week2} = 6.37, M_{week3} = 6.00, M_{week4} = 5.42, M_{week5} = 5.58, M_{week6} = 5.26$). The trend analysis confirmed that participants' perceived closeness with same-pursuit peers showed a negative linear trend as they advanced from week 1 to week 6, $F(1, 18) = 8.22, p = .01$; that is, as participants made more progress on their academic goal, they became more and more distant from same-pursuit peers. We then conducted the same analysis on participants' perceived closeness with significant others from week 1 to week 6. The effect of the stage in the pursuit was not significant, $F(5, 90) = 1.05$, *ns* ($M_{week1} = 8.00, M_{week2} = 7.68, M_{week3} = 7.42, M_{week4} = 7.42, M_{week5} = 7.63, M_{week6} = 8.00$). The trend analysis suggested that the participants' perceived closeness with significant others followed a quadratic trend from week 1 to week 6, $F(1, 18) = 5.68, p < .05$, such that participants' perceived closeness with significant others dropped slightly during the middle of the semester, but then picked up as they approached the end of their academic pursuit (see Figure 16).

In this study, we found that people distanced themselves from others who were pursuing the same academic goal as they made more progress toward the end-point,

whereas their relationship with significant others remained close throughout the pursuit. To further establish that people indeed treat others who are pursuing the same goal differently (i.e., from being friends to foes), in the next study, we employed the same method to examine people's perceived closeness with same-pursuit peers versus others who were pursuing a different academic goal.

Chapter 16: Study 1b – The Shift of Closeness with Same-pursuit Peers vs. Different-pursuit Others

In Study 1b, we tracked students' perceived closeness with their peers in the same academic pursuit and a different group of people: similar others who were pursuing a different academic goal. This study employed the same 6-week academic goal pursuit context as in Study 1a. We hypothesized that people's perceived closeness with same-pursuit peers would naturally decrease (i.e., becoming more distant) as they progressed to the end-point of the pursuit, whereas their perceived closeness with a similar other who was pursuing a different academic goal would not show the same negative trend, because a different-pursuit other would not be seen as a competition as one reached the advanced stage of academic goal pursuit.

METHOD

A total of 26 undergraduate students from a southwestern university participated in this study for a coffee-shop gift card. This study used a Stage in the Pursuit (mid-semester (week1) to the end-of-semester (week 6)) × Interpersonal Relationship (same-pursuit peer vs. different-pursuit other) design; both the stage in the pursuit and the interpersonal relationship are measured as within-subject variables.

We followed the procedures in Study 1a and asked participants to set their academic goal for the semester, identify a person who was pursuing a similar academic goal to theirs and was at a similar stage of progress, and report their perceived closeness with this same-pursuit peer on a 10-point scale (1 = not close at all, 10 = extremely

close). Different from Study 1a, instead of listing a significant other, the participants in this study were asked to then think of a person they knew, who was similar to them (they had a lot in common), but was currently studying at a different university; participants were also asked to type down the name and provide a description of this "different-pursuit other." They were then asked to report their perceived closeness with this different-pursuit other on a 10-point scale (1 = not close at all, 10 = extremely close), embedded among others questions such as how long they have known this person.

Five follow-up surveys were emailed to the participants during the five following weeks, tracking their progress on the academic goal, and their perceived closeness with the same-stage peer as well as the different-pursuit other.

RESULTS AND DISCUSSION

Similar to Study 1a, the manipulation check on progress level again yielded a main effect of the stage in the pursuit, $F(5, 125) = 6.98$, $p < .01$, such that participants indeed made more progress on the academic goal they set in the lab from week 1 to week 6 ($M_{week1} = 67.6\%$, $M_{week2} = 66.4\%$, $M_{week3} = 73.9\%$, $M_{week4} = 77.4\%$, $M_{week5} = 78.1\%$, $M_{week6} = 84.4\%$,).

We then conducted the repeated-measure ANOVA on participants' perceived closeness with same-pursuit peers from week 1 to week 6. The analysis yielded a moderate effect of the stage in the pursuit, $F(5, 125) = 2.09$, $p = .07$ ($M_{week1} = 7.46$, $M_{week2} = 7.04$, $M_{week3} = 7.19$, $M_{week4} = 6.81$, $M_{week5} = 6.73$, $M_{week6} = 6.69$). The trend analysis again showed a significant, negative linear trend, such that participants became more distant

from the same-pursuit peers as they advanced from week 1 to week 6, $F(1, 25) = 4.68$, $p < .05$. We then conducted the same analysis on participants' perceived closeness with different-pursuit others from week 1 to week 6. The analysis yielded a significant effect of the stage in the pursuit, $F(5, 120) = 4.96$, $p < .01$ ($M_{week1} = 5.76$, $M_{week2} = 6.76$, $M_{week3} = 7.16$, $M_{week4} = 7.36$, $M_{week5} = 7.68$, $M_{week6} = 7.20$). The trend analysis showed that the participants' perceived closeness with different-pursuit others followed a positive linear trend, $F(1, 24) = 13.64$, $p < .01$, such that as participants accumulated more progress on their academic goal, they became closer to the others who were pursuing a different academic goal at a different university (see Figure 17).

Consistent with Study 1a, we found that people distanced themselves from others who were pursuing the same academic goal as they made more progress toward the end-point, whereas their relationship with others who were pursuing a different academic goal improved throughout time. That is, how we treat others who are pursuing the same goal as us displays a unique pattern – which is different from how we manage other types of interpersonal relationships like significant others or friends in different institutions – we tend to draw these same-pursuit peers closer in the initial stage of pursuit, but gradually push them away as the end-point gets near.

While the results in this longitudinal study provided initial support for our hypothesis, we had a few concerns about the data. First of all, in this study we tracked participants' perceived closeness with others from the middle of the semester to the end of the semester, and treated it as a whole goal pursuit process. However, it is likely that the trend analysis only captured the shifts of closeness from the mid-stage (rather than the

initial stage) to the advanced stage of goal pursuit, and thus did not capture the entirety of the pursuit. In addition, we asked participants to report their own progress on the academic goal; although the manipulation check ensured that participants indeed made more progress as weeks went by, we could not know if the participants were honest about the report of their progress in the survey. Therefore, in subsequent lab studies, we directly manipulated participants' progress into either the initial stage or the advanced stage of goal pursuit, to see if the hypothesized pattern in perceived closeness still occur. In the next study, we also measured people's information sharing behaviors (i.e., the sharing of helpful tips) as a reflection of the shifts in their perceived closeness (from friends to foes).

Chapter 17: Study 2 – Perceived Closeness and Information Sharing Behavior

In Study 2, participants signed up for a lab survey session with a same-gender friend. We provided participants feedback of their own progress in the task (initial stage vs. advanced stage of pursuit), and manipulated whether their friend was in the same stage of the same pursuit or not (same-pursuit vs. control). Based on our hypothesis, when participants knew that their friend was pursuing the same goal and was in the same stage as themselves, they would view the friend either as a companion or a competition, depending on the stage they were in. We compared participants' perceived closeness with their friends before and after the manipulation of the progress feedback to capture the shifts in their perceived closeness. We also measured participants' information-sharing behavior as a reflection of such shift in relationship.

METHOD

A total of 160 undergraduate students from a southwestern university participated in this study for partial course credit. This study used a Stage in the Pursuit (initial vs. advanced) × Friend's Pursuit (same-pursuit vs. control) between-subject design. In addition, we manipulated participants' progress relative to their friends' progress in the same-pursuit conditions (slightly ahead vs. slightly behind) to ensure that the proposed pattern would occur no matter who was winning at the moment, as long as the participant was in the same stage of pursuit as his/her friend.

Participants signed up for the session with a same-gender friend, and were asked to fill out a pre-session survey one week before the lab session. The pre-session survey asked participants to report their demographic information, as well as how close they were with their friend on 10-point scales (adopted from Berscheid, Snyder, and Omoto 1989; Fitzsimons and Fishbach 2010; Schmitt, Silvia, and Branscombe 2000): "Relative to your other relationships, how close are you and XX (XX is the friend's name)," "XX and I have many things in common," "As a friend, I like XX," "XX is someone I would like to have as a close friend," and "I would like to meet and interact with XX more often." We created a pre-session closeness score by averaging participants' answers in these five questions (Cronbach's $\alpha = .97$).

On the day of the lab session, participants and their friends were led to two separate rooms. The cover story informed participants that some tasks in the session might require them to work remotely with their friend, and thus we have arranged for them to sit in different rooms and have remotely connected their computers (e.g., 1A in Room A) to their friends' computers (e.g., 1B in Room B); since the studies would be randomly allocated to each computer station, the participants were also reminded that they may or may not encounter such tasks. The cover story was implemented to ensure the credibility of the progress feedback and the sitting arrangements.

Participants then continued to read that the first study in the session was a "Verbal Creativity Task." To enhance the perceived importance of the task, we told participants that the task would gauge their vocabulary skills and the capacity to seek out novel and creative solutions to verbal problems, which was a recently discovered skill by

psychologists and educators (Pemberton and Sedikides 2001). Specifically, in this task participants were asked to rearrange the letters of one word to make as many new words as they could (each word they created must be at least 3 letters long). Participants were told that they would earn points when they generated correct new words using the letters from the original word; the more letters they used from the original word and the more words they generated, the more points they would earn. If they reach 1,000 points at the end of the task, they would win a $10 cash reward.

After the introduction, participants commenced to the task. After two sets of verbal creativity questions, participants were asked to wait as the computer analyzed their performance thus far. After two minutes, the computer provided different feedback to manipulate participants' perceived stage in the pursuit of 1,000 points – half of the participants received feedback indicating that they were at the initial stage of pursuit (either 213 points or 216 points), whereas the other half of the participants were led to believe that they have reach advanced stage of pursuit (either 813 points or 816 points). For those in the "friends in same pursuit" condition, the computer then displayed the progress that the participant's friend has made so far in the task. To enhance the credibility of the progress feedback, participants were asked to type down the name of their friend on the screen, as well as their own computer number so that the system could access the paired computer their friend was working on in the adjoining room. The computer then reported that their friends were in the same stage of pursuit as themselves, earning either 216/213 points (initial-stage conditions) or 816/813 points (advanced-stage conditions). To ensure that the relative performance (slightly ahead vs. slightly behind)

would not influence the hypothesized pattern, we counterbalanced the manipulation of the scores, such that half of the participants in the initial-stage conditions would receive feedback of 216 points while their friend has earned 213 points (slightly ahead), and the other half of the participants in the initial-stage condition would receive feedback of 213 points while their partner had 216 points (slightly behind); following the same procedure, we also counterbalanced the relative progress among the participants in the advanced-stage conditions. In contrast, for the participants in the "friend's pursuit control" condition, the computer did not display the progress or the task that the participants' friends were working on in the session; therefore, these participants did not know whether their friends were pursuing the same goal or not, since there were several surveys/tasks included in the session.

After the manipulation of progress feedback, we asked participants to report how close they were with their friend on the same 10-point scales as in the pre-session survey. We created a post-session closeness score by averaging participants' answers in these five questions (Cronbach's $\alpha = .97$). Participants were then given an opportunity to assist their friends who were working (or may work) on the same task; specifically, participants could send "hints" to their friends about the words that could be generated from the original words they have worked on thus far – a "hint" should not include the new word itself and could only be "clues," such as "the number after 9" or "a type of metal." Since the computers in the adjoining room displayed the verbal creativity questions in the opposite order, we ensured participants that the hints they provided would be valuable to help their friends earn more points, even if they were already working on this task. We

then measured the time participants spent on providing tips for their friends, as well as the length of the hints, as a reflection of their relationship with the friend at the moment.

RESULTS AND DISCUSSION

Perceived closeness. We first calculated the shift in participants' perceived closeness with their friend by deducting the pre-session closeness score from the post-session closeness score; a positive score would suggest an increase in closeness, whereas a negative score suggests distancing. The ANOVA of the shift of closeness score on the stage in the pursuit (initial vs. advanced), friend's pursuit (same-pursuit vs. control), relative progress (slightly ahead vs. slightly behind), and all their interaction terms yielded the hypothesized Stage in the Pursuit × Friend's Pursuit interaction, $F(1, 152) = 6.53$, $p = .01$. There was no other effect in this analysis, suggesting that the relative progress between the participant and their friend (i.e., whether the participant was slightly ahead or behind) did not influence the perceived closeness. Further contrast analyses showed that, among the participants at the initial stages of goal pursuit, those who knew that their friends were in the same stage of the same pursuit felt closer to their partners (M = .56) than those who did not know about their friends' pursuit (M = .20), $t(69) = -1.86$, $p = .067$. In contrast, this pattern reversed among the participants who were in the advanced stages of goal pursuit, such that the participants who knew that their friends were in the same stage of the same pursuit felt more distant from them (M = - .05) than those who were not informed of their friend's pursuit (M = .40), $t(87) = 1.96$, $p = .05$ (see Figure 18).

Information-sharing behavior. We then conducted the same analyses on participants' information-sharing behavior, including the time they spent on providing helpful tips for their friends and the length of the tips. The ANOVA of the time participants spent on sharing tips yielded the hypothesized Stage in the Pursuit × Friend's Pursuit interaction, $F(1, 152) = 8.56$, $p < .01$. There is no other effect in this analysis. Further contrast analyses showed that, among the participants at the initial stages of goal pursuit, those who knew that their friends were in the same stage of the same pursuit spent slightly more time developing tips (M = 115.99 seconds) than those in the control condition (M = 93.13 seconds), $t(69) = -1.01$, $p = .32$. In contrast, among the participants who were in the advanced stages of goal pursuit, those who knew that their friends were in the same stage of the same pursuit spent less time developing tips (M = 86.71 seconds) than those in the control condition (M = 153.74 seconds), $t(87) = 3.20$, $p < .01$ (see Figure 19).

Consistently, the ANOVA of the length of the tips also yielded the Stage in the Pursuit × Friend's Progress interaction, $F(1, 152) = 8.43$, $p < .01$. There is no other effect in this analysis. Further contrast analyses showed that, among the participants in the initial stages of goal pursuit, those who knew that their friends were in the same pursuit as themselves provided more helpful tips (M = 46.86 words) than those in the control condition (M = 31.40 words), $t(69) = -1.44$, $p = .15$. In contrast, among the participants who were in the advanced stages of goal pursuit, those who knew that their friends were in the same stage of the same pursuit provided less helpful tips (M = 33.74 words) than those who were not informed of their friend's pursuit (M = 69.35 words), $t(87) = 2.71$, p

< .01 (see Figure 20).

The results in this study showed that, when pursuing the same goal as their friends, participants became closer to their friends when they just started the pursuit, but became distant from their friends as they moved closer to the end point, even though the reward was available for everyone to attain. Such shift of relationship from friends to foes also manifested through their information sharing behaviors, such that people spent less effort sharing tips to their same-pursuit peers as they reached the advanced stage of the pursuit; in comparison, they were more willing to help when their friends were not pursuing the same goals as themselves.

Chapter 18: Study 3 – The Zero-sum Belief

Study 3 served two important purposes. First of all, an alternative explanation for the patterns observed in the prior study is anticipated reciprocation/retaliation; that is, people could anticipate that by sharing information with others in the same pursuit, others would also share information to help them, or reciprocate the favor through other ways in the future; conversely, if they do not offer to help, others would retaliate against them in the future. To rule out this alternative explanation and show that our hypothesized pattern influences people's interactive behaviors above and beyond the expectation of reciprocation/retaliation, in this study we paired participants with a partner using random selection, and ensured that the pairs did not know each other. In addition, we set up the computer system such that participants could send messages to help their assigned partners, but could not receive any message in return. This set-up allowed us to fully attribute the information-sharing behaviors observed in the lab to participants' own willingness to help, rather than expectation of reciprocation/retaliation in the future.

Secondly, because the people who held a strong zero-sum belief would be more likely to see others pursuing the same goal as competition when they reach the advanced stage of goal pursuit (i.e., their success depended on others' failure, even when the goal was available for everyone to attain), we expect the hypothesized pattern to manifest only among those with a strong zero-sum belief. Therefore, we measured participants' zero-sum belief at the end of the study, and incorporated this moderator into our analyses.

METHOD

A total of 129 undergraduate students from a southwestern university participated in this study for partial course credit. This study used a Stage in the Pursuit (initial vs. advanced) × Zero-sum Belief mixed design; the zero-sum belief was measured as an individual difference factor.

At the beginning of the session, participants were informed that they would be paired with a student who was participating in the study in the adjoining room, because some tasks may require them to remotely communicate with each other. Participants then followed instructions to enter their demographic information into the pairing program, including their gender, major, age, and preferred leisure activities. They then waited for the computer to assign a partner for them. After 15 seconds, all participants read that they were now paired with a participant in the adjoining room, and a short profile of this assigned partner was displayed on the screen for their information. The profile was manipulated such that each participant was paired with someone with the same gender and the same major, but different preferences for leisure activities to enhance the credibility of the profile. Following the procedure in the prior study, a short survey then popped up and asked participants to report how close they felt they were with this partner on five 10-point scales, such as "I feel that my assigned partner and I have many things in common," "As a friend, I think I will like my assigned partner," "my assigned partner is someone I can see myself being closer to." We created a pre-pursuit closeness score by averaging participants' answers in these questions (Cronbach's $\alpha = .94$).

After the pairing process, participants commenced the session and went through two filler studies. They then entered the main task – an online shopping study. Participants were invited to visit some shopping website, and for each site, they would view the products and online prices, and select the ones they considered "good online deals" based on their knowledge of the retail price of these products. Participants were told that the more good online deals they identified (i.e., the cheaper the online products were, comparing to their current price in the retail store), the more points they would earn. If they could earn 500 points at the end of the shopping task, they would have saved $500 virtual dollars through identifying good deals online, and thus would win a $30 Amazon gift card as reward. The reward was guaranteed for everyone who could earn 500 points by the end of this task.

Participants viewed two online shopping websites, one for furniture and the other for electronics. We selected products that students were familiar with, but would not shop on a regular basis (such as designer sofas and home theater sound systems), so that they would remain uncertain about their performance; this design allowed us to convincingly manipulate participants' current stage in the pursuit through providing different progress feedback. Specifically, we manipulated participants' progress while keeping their invested effort constant across the two stage-in-the-pursuit conditions: all participants saw a progress bar with 500 points anchoring on the right-end of the bar, and while the participants in the initial-stage condition had about 1/5 of the bar filled (equal to about 100 points), the participants in the advanced-stage condition had about 4/5 of the bar filled (equal to about 400 points) after completing these two shopping sites. The screen

also displayed their partner's current score, either 100 points (initial-stage condition) or 400 points (advanced-stage condition), so that participants knew that their partner was pursuing the same goal and was in about the same stage of pursuit as themselves. Because we displayed participants' own progress through the progress bar, but provided the partner's progress information using the actual score, we could ensure that the participants did not become suspicious about having the same exact score as their partner (and yet believed that their partners was in the same stage of pursuit). After the progress feedback, the same five 10-point closeness scales popped up to gauge participants' perceived closeness with their assigned partner at the moment. We created a post-pursuit closeness score by averaging participants' answers in these questions (Cronbach's α = .96).

After the progress report, participant continued to complete the task. Participants then answered a few filler surveys, one of which gauged their zero-sum belief (adopted from Crocker and Canevello 2008). Specifically, participants were asked to indicate how much they agreed with statements such as "In order to succeed in this world, it is sometimes necessary to step on others along the way" and "My successes don't mean much if most other people succeed at the same task," on 10-point scales (1 = Strongly disagree, 10 = Strongly agree). All participants were entered into a lottery for the reward.

RESULTS AND DISCUSSION

Stage in the pursuit. We first calculated the shift in participants' perceived closeness with their assigned partner by deducting the pre-pursuit closeness score from

the post-pursuit closeness score; a positive score would suggest an increase in closeness, whereas a negative score suggests distancing. We then conducted t-test analyses on the pre-pursuit closeness score, post-pursuit closeness score, and the shift of closeness, respectively, using the stage in the pursuit (initial vs. advanced) as the predictor. The analysis showed that while there was no significant difference in the pre-pursuit closeness score ($M_{initial}$ = 6.76 vs. $M_{advanced}$ = 6.61), $t(127) = .55$, *ns*, people felt less close with their partners when they had reached the advanced stage (M = 5.59) than the initial stage (M = 6.18) of the pursuit, $t(127) = 2.11$, $p < .05$; that is, there was a strong distancing effect among those who were in the advanced stage (shift of closeness score: M = - 1.02) than the initial stage (M = - .58) of the pursuit, $t(127) = 2.47$, $p = .015$.

Zero-sum belief. Based on our hypothesis, we expected the competitiveness to exist among those with a strong zero-sum belief because, even though every participant could have earned the gift card, the people with a strong zero-sum belief would be more likely to view the task as a zero-sum game, and became competitive against their partners as they reached the advanced stage of the pursuit. Therefore, we conducted a regression analysis on the shift of closeness score using two predictors, the stage in the pursuit (initial vs. advanced), zero-sum belief, as well as their interaction. This analysis yielded a main effect of the stage in the pursuit, β = - .22, $t(125)$ = - 2.48, $p < .05$, indicating that people became more distant from their partners when they were in the advanced stage than the initial stage of goal pursuit, and a main effect of the zero-sum belief, such that the people who held a stronger zero-sum belief felt more distant from their partners, β = - .14, $t(125)$ = - 2.34, $p < .05$. More importantly, this analysis yielded a moderate Stage in

the Pursuit × Zero-sum Belief interaction, $\beta = -.09$, $t(125) = -1.43$, $p = .16$. Following the spotlight analysis procedures (Irwin and McClelland 2001), we explored the impact of stage in the pursuit on the shift of closeness score depending on the zero-sum belief. For participants with a strong zero-sum belief (one standard deviation above the mean), they were significantly more distant from their partners when they reached the advanced stage of the pursuit ($M = -1.34$) than in the initial stage of the pursuit ($M = -.66$), $\beta = -.34$, $t(125) = -2.76$, $p < .01$. However, for individuals with a weak zero-sum belief (one standard deviation below the mean), stage in the pursuit did not affect their feeling of closeness, $\beta = -.09$, $t(125) = -.74$, *ns*. We graphed Figure 21 based on the spotlight analysis (1 S.D. above versus below the mean).

The results in this study showed that, while there was a general pattern that people became more distant from others pursuing the same goal as they moved closer to the end-point, such shift of relationship from friends to foes manifested only when people held a strong zero-sum belief, because they were more likely to view the attainment of the goal as a competition. In the next study, we directly measured the underlying mechanisms of goal attainability, comparison and competitiveness that led to the observed shift in perceived closeness.

Chapter 19: Study 4 – Underlying Mechanisms

Study 4 served several important purposes. First of all, we adopted the procedure in Study 3 to rule out the alternative explanation of expected reciprocity. In addition, we directly manipulated participants' invested effort when manipulating their current stage of goal pursuit, such that those in the initial-stage condition invested less effort than those in the advanced-stage condition, to mimic real-life goal pursuit processes. This manipulation helped to rule out perceived difficulty of the task, velocity, or perceived ability as alternative factors that led to the observed pattern.

More importantly, we directly measured the proposed mechanisms in this study, and tested whether people indeed had different concerns in different stages of goal pursuit, and thus sought companionship from others to confirm that the goal was attainable when they were in the initial stage of goal pursuit, but conversely treated others as comparison benchmark and competition when they have reached the advanced stage of the pursuit.

METHOD

A total of 113 undergraduate students from a southwestern university participated in this study for partial course credit. This study used a Stage in the Pursuit (initial vs. advanced) × Zero-sum Belief mixed design; the zero-sum belief was measured as an individual difference factor. Similar to the prior study, we expected the hypothesized pattern in participants' information-sharing behaviors to intensify among those with a stronger zero-sum belief, because these people were more likely to view others in the

same advanced stage of the pursuit as competition, and would aim to attain the goal sooner than others.

At the beginning of the session, participants were informed that they would be paired with a student who was taking the study in the adjoining room, because some tasks may require them to remotely communicate with each other. Following prior procedures, participants were told that their computer stations were designated as "the transmitter," while the corresponding computer their paired partner would use in the adjoining room was "the receiver." That is, when the opportunity to interact occurred, they would be able to send messages to their paired partner, but their partner would not be able to send messages back to the participants' stations.

Participants then began the first task in the session, and were asked to view and memorize calorie and fat information of different food items. Participants were told that they would view 5-7 food items on each page, and could spend as much time as they liked to memorize the nutrition information for each item on that page, before clicking "Continue" to enter the question section. In the question section, they would be asked to type down the calorie and fat information of the food items they saw earlier, and they would earn points based on how close their answers were to the accurate number. If they could reach 100 points at the end of the task, they would win a $30 Amazon gift card.

Participants then commenced the task. For those in the initial-stage condition, they answered three pages of food-item questions, and saw a progress bar indicating that they were halfway through Stage 2, out of a total of five stages (the end of Stage 5 represented 100 points). In other words, participants have earned about 30 points thus far.

In contrast, participants in the advanced-stage condition went through 7 pages of food-item questions, and the progress bar showed that they were halfway through Stage 4, out of a total of five stages. That is, they have earned about 70 points. Different from prior studies, in which we manipulated participants' current stage of goal pursuit while keeping their invested effort constant between the initial-stage and the advanced-stage conditions, in this study we let participants actually spent different amount of effort to reach the initial or the advanced stage of goal pursuit, therefore ensuring that the perceived difficulty of the task, velocity of progressing, and perceived ability remained constant between the two conditions.

The computer screen then displayed the progress that participants' paired partner has made so far in the task. The progress bar showed that the participants' paired partner was in the same sage of pursuit as themselves (i.e., for participants in the initial-stage condition, they saw that their partner was also about halfway through Stage 2). By using the progress bar, we were able to ensure that participants viewed themselves to be in the same stage of pursuit as their partners, without having to provide specific number-based feedback.

We then asked participants to report their current feelings about the task. Specifically, to gauge participants' perceived goal attainability, we asked them to report how difficult they thought it was to earn 100 points for the prize on 10-point scale (1 = not difficult at all, 10 = very difficult to attain). To gauge whether participants compared their progress against their partner's progress and viewed them as comparison benchmarks, we asked participants to report whether they viewed their assigned partner

more like a partner who was facing the same challenges as themselves, or more like a comparison benchmark that provided information about how well they were doing (1 = more like a partner, 10 = more like a comparison benchmark). In addition, we asked participants whether they felt cooperative or competitive with their paired partner (1 = cooperative, 10 = competitive). These mechanism questions were inserted among filler items to disguise the true purpose of the questions.

After receiving progress feedback and reporting their current feelings, participants were given an opportunity to assist their paired partner who was working on the same task in the adjoining room. Specifically, the computer displayed all the answers the participants have provided thus far, as well as the error rate (in percentages) alongside each answer (i.e., the absolute value of the difference between participant's answer and the accurate number, divided by the accurate number). Participants could then simply check the answers they wanted to submit to their paired partner, to provide "reference values" for their partner as they encountered these questions. This procedure allowed us to measure how willing participants were in helping their paired partner earn more points, because we were able to capture the quality of the shared tips – if participants shared a lot of wrong answers to their partner, it would indicate that they viewed the partner more like a "foe" than a "friend," and distanced themselves from the partner instead of seeking companionship from them.

After the opportunity to share their answers with the paired partner, participants continued to complete the task. Upon completion, they answered a few filler surveys, one of which gauged their zero-sum belief through the same 10-point scales (1 = Strongly

disagree, 10 = Strongly agree) used in Study 3. All participants were entered into a lottery for the reward.

RESULTS AND DISCUSSION

Stage in the pursuit and zero-sum belief. Following the procedures in the prior study, we conducted a regression analysis on the error rate of the shared tips using two predictors, the stage in the pursuit (initial vs. advanced), zero-sum belief, as well as their interaction. This analysis yielded a moderate main effect of the stage in the pursuit, β = .97, $t(109) = 1.84$, $p = .07$, suggesting that people shared tips with moderately higher error rate to their partners when they were in the advanced stage than the initial stage of goal pursuit. More importantly, this analysis yielded a significant Stage in the Pursuit × Zero-sum Belief interaction, $\beta = -1.06$, $t(109) = -2.70$, $p < .01$. Following the spotlight analysis procedures (Irwin and McClelland 2001), we explored the impact of the stage in the pursuit on the error rate depending on the zero-sum belief. For participants with a strong zero-sum belief (one standard deviation above the mean), they shared significantly worse tips (i.e., higher error rate) when they reached the advanced stage of the pursuit (M = 468.37% error rate) than in the initial stage ($M = -14.31$% error rate), $\beta = 2.41$, $t(109) = 3.21$, $p < .01$. However, for individuals with a weak zero-sum belief (one standard deviation below the mean), the stage in the pursuit did not affect the quality of the tips they shared, $\beta = -.47$, $t(109) = -.62$, *ns*. We graphed Figure 22 based on the spotlight analysis (1 S.D. above versus below the mean).

Underlying mechanisms. Based on our hypothesis, people seek companionship in the initial stage of goal pursuit to enhance the belief that the goal is indeed attainable, and conversely treat others as comparison benchmarks and compete against them when they reach the advanced stage of the pursuit.

To test these mechanisms, we first conducted a regression analysis on the error rate of the shared tips using two predictors, the stage in the pursuit (initial vs. advanced), perceived goal attainability, as well as their interaction. This analysis yielded a main effect of the perceived goal attainability, $\beta = -.61$, $t(109) = -2.15$, $p < .05$, suggesting that the more difficult it was for the participants to attain the goal, the better the quality of the tips they were willing to share with their assigned partners. Although the Stage in the Pursuit × Goal Attainability interaction was not significant, $\beta = .20$, $t(109) = .72$, *ns*, we followed the a-priori hypothesis and conducted two regression analyses to explore the impact of perceived goal attainability on the error rate at the initial stage and the advanced stage of the pursuit, respectively. We found that for the participants in the initial stage of the pursuit, the perceived difficulty of goal attainment negatively predicted the error rate of the tip, $\beta = -.81$, $t(54) = -3.05$, $p < .01$, such that the more difficult it was to attain the goal, the better the tips they were willing to share with assigned partners. However, for individuals in the advanced stage of goal pursuit, the perceived goal attainability did not affect the quality of the tips they shared, $\beta = -.40$, $t(55) = -.85$, *ns*.

We then conducted similar analyses on the mechanism of viewing others as comparison benchmarks. First of all, the regression analysis on the error rate of the shared tips using two predictors, the stage in the pursuit, comparison benchmark, as well

as their interaction, showed the hypothesized Stage in the Pursuit × Comparison Benchmark interaction, $\beta = .58$, $t(109) = 2.86$, $p < .01$; there were no other effects in this analysis. The two follow-up regression analyses revealed that, for the participants in the advanced stage of the pursuit, the extent to which they viewed assigned partners as comparison benchmarks positively predicted the error rate of the tip, $\beta = .91$, $t(55) = 2.85$, $p < .01$, such that the more they viewed the assigned partners as comparison benchmarks, the worse the tips they shared. However, for individuals in the initial stage of goal pursuit, the feeling of comparison benchmark did not affect the quality of the tips they shared, $\beta = -.25$, $t(54) = -1.16$, *ns*.

Lastly, we conducted the same analyses on the mechanism of competitiveness. The regression analysis on the error rate of the shared tips using two predictors, the stage in the pursuit, competitiveness, as well as their interaction, first yielded a main effect of the competitiveness, $\beta = .51$, $t(109) = 2.09$, $p < .05$, suggesting that the more competitive participants felt, the worse the quality of the tips they shared with their assigned partners. More importantly, this main effect was qualified by the hypothesized Stage in the Pursuit × Competitiveness interaction, $\beta = .61$, $t(109) = 2.48$, $p < .05$. The two follow-up regression analyses revealed that, for the participants in the advanced stage of the pursuit, the extent to which they viewed assigned partners as competition positively predicted the error rate of the tip, $\beta = 1.12$, $t(55) = 2.93$, $p < .01$, such that the more they viewed the assigned partners as competition, the worse the tips they shared. However, for those in the initial stage of goal pursuit, the perceived competitiveness did not affect the quality of the tips they shared, $\beta = -.09$, $t(54) = -.36$, *ns*.

These analyses confirmed that while the perceived difficulty in attaining the goal drove people's information sharing behavior in the initial stage of the pursuit, it was the extent to which people viewed others as comparison benchmarks and the perceived competitiveness that decided their information sharing behaviors in the advanced stage of goal pursuit.

In the last study, we returned to the real world and aimed to validate our empirical findings – both on the shifting of closeness and the information sharing behaviors – through a qualitative dataset collected from a joint global weight-loss program, the Weight Watchers.

Chapter 20: Study 5 – A Real-world Validation with Weight Watchers

Study 5 represents a qualitative field validation of perceived closeness in goal pursuit in the context of Weight Watchers, the world's largest and best-known commercial weight loss organization (e.g., Heyes 2006; Stinson 2001). According to the company information, approximately 1.3 million customers worldwide attend over 45,000 Weight Watchers meetings led by 12,000 leaders, and in 2011 alone, consumers spent almost $5 billion on Weight Watchers branded products and services (www.weightwatchersinternational.com). For a weekly fee, Weight Watchers customers purchase membership in a weight loss program, the key differentiating features of which are tracking daily food points and attending weekly group meetings.

Weight Watchers represents a well-suited marketing context to validate our empirical findings on the shift of perceived closeness and information sharing behaviors in joint goal pursuit processes for several reasons: 1) all customers, who are mostly strangers before the program, are engaged in the pursuit of the same goal—achieving weight loss; 2) meetings are designed to encourage interactions and relationships among members in the form of active information sharing and development of companionship; 3) meetings also encourage public sharing of weight loss progress of each member, allowing progress monitoring and competition; 4) typically, members pursue their weight loss goals over a sufficient period of time to allow observation of how the relationship dynamics evolve in the initial versus advanced stage of goal pursuit.

METHOD

As our purpose was to gauge how Weight Watchers members perceived each other (as a friend or a foe) and whether these perceptions affected their information sharing behaviors depending on the stage of weight loss pursuit, we used a set of qualitative data collected and published at the Journal of Consumer Research (Moisio and Beruchashvili 2010), which included both long interviews (51 participants in three different Weight Watchers meeting locations; see Appendix A for the informants' profile table) as well as observations (across 143 meetings) from Weight Watchers in a Midwestern city. Please refer to Moisio and Beruchashvili (2010) regarding the details of the interview scheme and observation procedures.

In the data analysis, we adopted an extended-case method approach (Burawoy 1998), in which data coding was guided by constant oscillation between our hypothesis and data. The verbatim-transcribed data were entered into the qualitative data analysis software NVivo, and then we followed analytic procedures recommended for qualitative data analysis (Spiggle 1994). We created a coding scheme (please see Appendix B) based on our hypothesis. During the coding process, we looked for instances reflective of interpersonal relationships, perceived closeness, information sharing behaviors, and how these varied depending on the stage of weight loss. We repeated this process several times to achieve data reduction and to arrive at the final pool of the findings.

RESULTS AND DISCUSSION

We operationalized the stage in goal pursuit based on the percentage of weight-loss progress made at the time of interview/observation relative to one's goal weight; those who have achieved less than or equal to 50% of their goal weight were categorized as in their initial stage of the pursuit, whereas those who have achieved more than 50% of their goal weight were categorized as in the advanced stage of the pursuit. Below, we reported our findings in each stage of goal pursuit, respectively.

"We're all in the same boat:" Companionship and information sharing in the initial stage of goal pursuit. The informants experienced pursuit of weight loss as a difficult goal to accomplish, and the most challenging part was adhering to Weight Watchers dietary regimen. Staying within Weight Watchers daily points was especially strenuous at the beginning, when members were struggling to learn about the program and how it works. Therefore, Weight Watchers group meetings emerged as a valuable company of the "like-minded others" (e.g., Muñiz and O'Guinn 2001) who were all struggling for the attainment of the same goal and were willing to lend a helping hand:

> You know the meetings really, put forth good support, a good support system, because everybody, you know, everybody that goes there is trying to lose weight and they all have the same ups and downs, and the same trials and tribulations that I have. We're all struggling for the same thing. So it's really nice to go there and get that support … gives you the feeling that you're not alone, that we're all in the same boat … Not that my husband or children don't support me, but they're not

> on diet, so they, maybe, don't always wanna listen to me, but these people [Weight Watchers] know what I'm going through. (Julie)

This informant, Julie, who has lost 25 out of the goal 50 pounds and who has joined Weight Watchers the second time almost eight months ago, appreciated being surrounded by the fellow Weight Watchers in the meeting. She emphasized that "being in the same boat" with people who were undergoing the same dietary "trials and tribulations" provided a sense of support different from the support of her family. Other informants concurred with the view expressed by Julie that the pursuit of the same goal as a collectivity unfolds in the spirit of building companionship. Everyone in the group meetings renders psychological support to one another, as members feel united by similarities of their weight loss experiences.

The companionship that Julie finds so supportive was also crucial for the perception of goal attainability. As already mentioned, informants believed that weight loss was a difficult goal to achieve, fraught with challenges such as dietary lapses. These experiences often tainted members' belief in the possibility of attaining the goal, and being surrounded by the like-minded Weight Watchers helped alleviate the doubt:

> When I first joined, I went into that meeting, and there were all sorts of people … people from all walks of life … some were bigger than me, and some were like, why are you here, you know? … when you been tryin' to lose [weight] your whole life like me … [in the meeting] I thought, 'I can do this too,' I mean, there were all this people, and if they think they can lose hundred pounds, sure I can

> lose my 25! I just felt very motivated, and it kinda took my doubt away, 'cause you know, I've been on and off diets as long as I remember. (Brenda)

Brenda was the informant who believed she was a "chronic dieter." She has had multiple unsuccessful attempts at weight loss prior to joining Weight Watchers. Brenda felt motivated to pursue her goal, encouraged by the sight of other striving Weight Watchers. Brenda further elaborated in the interview that fellow Weight Watchers and the group leader assured her of the attainability of the goal: "She [group leader] said, 'you're here, we all, we gonna help you, we gonna do this together,' I thought that was very neat" (Brenda). This assurance that the group members served as companions to get each other to the goal was echoed across other informants as well. In our observations of group meetings, we heard on more than one occasion that the attendees of the meetings are "in it" and will get to the goal together.

Companionship was clearly manifested during the times of dietary challenges. One of the informants, Anna, who wanted to lose at least 50 pounds to ease health issues and was relatively new to Weight Watchers, explained:

> Meetings put out good camaraderie … I feel like they're my friends, because they're there when I need them, and you know, we visit with each other before the meeting, and you know, especially the ones who're like me, just starting, really struggling, we even seat together, and we commiserate with each other, and I tell them about my week, they say, 'oh, my week was worse,' and you go, okay, maybe my week was not as bad, so we kinda dust each other off, and we, this, it's good camaraderie. (Anna)

Anna felt "good camaraderie" with fellow Weight Watchers especially those who still had a lot of weight to lose. She has been on the program for about 3 months and she still struggled with sporadic losses and gains. According to Anna, members "commiserate" with one another about their dietary mishaps, which she found encouraging. Anna referred to her fellow members as "friends," and they all work together to "dust each other off" and keep pursuing their goals.

The companionship that manifested itself at the group meetings seemed to be especially reinforced by information sharing. Meetings, in general, represented the forum for voluntary information sharing, which was emphasized by the Weight Watchers organization itself (through group leaders). An excerpt from one of the meeting observations provided an example:

> The leader addressed the group by asking if anyone had anything to share. A female sitting in the second row to the front of the room stood up and introduced herself to the group: "Hi guys, I'm Emily [pseudonym], joined four weeks ago … just wanted to share … you know, how we think Skinny Cow ice-cream is 2 points per serving, right? … I did calculate, and with sugar, it actually comes out close to 3 points a serving … just wanted to put it out there … I'm trying to figure this thing out, like we all do, and people have been helpful, so I wanna do my bit." Emily sat down and the leader thanked her for sharing this very important information because Skinny Cow was one of the favorite desserts there; the leader suggested that those interested should talk to Emily after the meeting to find out

how she calculated the points. (Observation note, location #1, 5:30pm group meeting)

As seen from the excerpt, Emily was one of the new Weight Watchers. She felt compelled to share an important finding regarding the Weight Watchers favorite dessert with other members. Like Emily, other informants in our sample, who were farther away from their goal weights or were relatively new to the program, seemed to be very willing to speak up at the group meetings and share helpful advice:

> I love sharing, I always say something about, 'oh, I found this 2 point snack or,' you know, I like giving tips, I'm struggling myself, so I wanna help others … I get advice from meetings, there's always some good information coming out … I'm learning how to do this [weight loss], and so, like, if I find some good recipe, or, like for Thanksgiving, I made this, I made this low-point pumpkin pie, oh, it was delicious, it was just a point, for a serving, so, I was, I actually typed that up, and I had a bunch of it, so I gave that to the leader, so she was giving it out … I like helping out that way. (Cynthia)

Cynthia was a Weight Watcher who has lost 10 pounds of the 40-pound goal. As she was learning to navigate the Weight Watchers diet, she enthusiastically shared information she found helpful. She went as far as preparing multiple copies of the pie recipe and distributing them at the meeting. Among the informants who either joined Weight Watchers recently or were still far away from reaching the goal, information sharing was quite prevalent.

"I can do it myself:" Certainty of goal attainment, competitiveness, and distancing in the advanced stage of goal pursuit. Interestingly, the companionship and information sharing that we observed among the informants who were in initial stages of goal pursuit seemed to reverse as the informants got closer to their goal weight (i.e., having achieved more than 50% of the goal weight). One characteristic of this changing dynamic seemed to pertain to the belief that one could attain the goal oneself, without seeking companionship from group meetings or fellow Weight Watchers. For instance, Patricia, who was 5 pounds shy of her goal of 30-pound loss, expressed her attitude:

> *Informant:* My plan is to lose this 5 pounds by next week … I know I can do it.
>
> *Interviewer:* Have you lost 5 pounds in one week before?
>
> *Informant:* Well, I had my downs, there … were weeks in there, I lost like quarter of a pound … maybe not in one week, but you know, I didn't think I could lose 25 pounds either, which I did, so … I think my body is different now, and I know what I gotta do, so I think I'll get there next week, and hit lifetime. (Patricia)

Even if Patricia has not lost five pounds in a single week, she was confident that she could accomplish the goal on her own – that is, Patricia felt certain about the goal's attainability.

Because of this heightened independence and confidence in goal attainability, the informants who were getting close to the goal began to monitor their progress more intensely, using others in the program as comparison benchmarks, and caring very much about whether they were losing weight faster or slower than their fellow Weight

Watchers members – a demonstration of their competitiveness. Judith, who was also only 5 pounds away from her 20-pound goal, explained:

> You can usually tell when you're gaining … at least I can, for myself … so then I don't feel like showing up at a meeting …'cause I feel I'm the only one in there who hasn't lost, and I don't wanna see the number on the scale. (Judith)

Having made progress toward the goal, Judith did not want to weigh in at the Weight Watchers scale without scoring a loss. Judith's attitude was indicative of her competitiveness: she wanted to be the winner, not the loser, and "showing up" at the meeting may aggravate how she felt about an episodic setback. Informants like Judith did not want to disclose that they still could experience dietary slip-ups, even if they were so close to reaching their goals, as Carol pointed out:

> … you don't feel like sharing with everyone that you actually pigged out, and that's the reason you gained … so you stay away and think, I'm gonna do it on my own. (Carol)

Carol, like Judith, would rather try and lose the weight on her own, without being found out at the Weight Watchers official scale. This demonstrated not only the confidence she had regarding goal attainability, but also an emphasis on progress monitoring and a desire to "win" in the weekly weigh-in.

Regardless of whether informants have made steady progress or experienced the temporary setbacks, being close to the goal seemed to induce competitiveness, which led to a tendency to reduce interactions with fellow members and even withdrawal from group meetings (a demonstration of distancing), as is the case of Sharon:

> I lost 60 pounds, so I have 10 more to go. … I haven't been going to meetings every week, not actually after I lost 50 pounds, I just don't think I need to. I may go one a month, maybe twice, but that hasn't been the case … I already got everything I need to know from the program, so the fact that I lost 10 pounds without going there every week, I mean, it's not like they're my friends or anything, I don't need to see them every week. (Sharon)

Sharon, who lost 60 pounds and has 10 pounds left to lose, has dramatically cut down on the frequency of attending group meetings. Sharon has adopted a very instrumental approach to group meetings and Weight Watchers peers – people in the group meeting were not "friends" any more as Sharon did not feel the need to interact with them on a weekly basis.

The competitive spirit led to distancing, which could manifest through the withdrawal from fellow Weight Watchers and group meetings, as well as how informants ceased sharing information with each other. Even if these informants attended group meetings, they did so silently. Some observation data pointed to this pattern as well; a few of the informants we interviewed, who were at a more advanced stage of goal pursuit or about to attain the goal, tended not to speak up in meetings; they preferred to sit in back rows of the meeting room and leave shortly after the meeting was over. The changed pattern of information sharing was demonstrated by the quote from Susan:

> I'm very close to getting to goal. As of today, I'm officially only 8 pounds out! … Well, I share a lot less now, I did all my sharing … 'cause you know, I'm kinda at a different place … you know, they gotta learn themselves, I put a lot of effort in

this program, and you gotta do that, I mean, if you … I just think they're gonna get more out of people who're, who're in the same situation … I just listen [at meetings], sometimes I don't stay, I just go in, get weighed, and leave. (Susan)

Susan believed that others had to endure their share of "tribulations" in the program, and she did not feel obligated to offer help by sharing information in the meetings. Thus, the more advanced informants were in their weight loss pursuit, they seemed to become more competitive, which manifested in increased distancing from fellow Weight Watchers and group meetings, withdrawal, and their disinclination to share information in the meetings.

Summary. The analysis of the qualitative dataset collected at Weight Watchers provided further validation for how the dynamics of interpersonal relationships would change depending on the stage of goal pursuit. Specifically, in the initial stage of goal pursuit, when informants have achieved equal to or less than 50% of their goal weights, the spirit of companionship animated weight loss experience. This was first of all seen in how attending Weight Watchers weekly group meetings created a sense of joint goal pursuit. Group meetings brought together a very diverse group of people in terms of demographics, values, and past attempts in weight loss. Nevertheless, informants perceived that they are all "in the same boat," as everyone was seemingly trying to progress towards the same desired weight-loss goal. This mindset of seeking companionship made informants relate to each other's dietary "trials and tribulations" even better than family members could. It also enhanced the perception of goal attainability, which was dampened by prior unsuccessful weight loss attempts. Observing

others in the group meetings helped to confirm that informants could indeed get to their goal.

This seek of companionship was prominently manifested through the informants' belief that they ought to share helpful weight loss information with their Weight Watchers peers. Especially for the members who were in the initial stages of weight loss, reliance on tips, advice, and "tricks" shared by fellow members was considered vital and beneficial. As comrades in misery, informants felt almost obligated to share information in group meetings, whether related to low-point snacks or favorite recipes. They spoke up voluntarily and enthusiastically in meetings, and they also seek frequent contact with fellow Weight Watchers by attending meetings more than once a week. These informants were convinced that attending meetings and being surrounded by like-minded others were crucial in helping carry on with challenging weight loss journeys and in arriving successfully at the goal. Being "in the same boat" thus fostered companionship that rendered fellow Weight Watchers not just comrades in misery, but "friends," a term with which some of the informants designated the people in the meetings.

This need for companionship was replaced by competitiveness and distancing from meetings and fellow Weight Watchers in the advanced stage of goal pursuit. Among informants who have achieved more than 50% of their goal weights, the closeness to the goal produced heightened confidence and certainty in one's ability to attain the goal. These informants thus started downplaying the importance of attending group meetings and congregating with fellow Weight Watchers. They believed that they could attain the goal entirely on their own. Such certainty of goal attainment thus led to intense progress

monitoring, comparison against other members, and thus competitiveness. Informants started to perceive other Weight Watchers as the "other" rather than someone in the same boat or a comrade in misery. Consequently, informants closer to the goal seek to minimize association with "other" Weight Watchers, withdraw from meetings and other members, which was observed through both the frequency and depth of participation. Some informants even intended to suspend being at group meetings altogether as they saw no further benefit.

Competitiveness also influenced advanced-stage Weight Watchers' information sharing behaviors. Some informants only came to the Weight Watchers meeting locations to weigh in (i.e., another demonstration of their intense progress monitoring) and did not stay for meetings. Even when they chose to stay for group meetings, they preferred keeping their weight loss "trials and tribulations" to themselves. When they experienced setbacks in the progress towards the goal, they remained silent during meetings and did not seek encouragement or advice from other Weight Watchers. Not only did these informants tend to keep to themselves more, but they also tended to share much less or no weight-loss tips at meetings. Rather than voluntarily sharing information, informants closer to the goal believed others had to undergo their share of weight loss errors to learn, thus keeping weight loss tips more to themselves. In summary, informants in the advanced stage of goal pursuit tended to consider fellow Weight Watchers more like foes than friends.

Chapter 21: General Discussion

The others who are pursuing the same goal as us constitute a unique group in our social network; they are not our significant others or close friends, but we have one important thing in common – we are striving for the same individual goal. In some situations, this similarity could build close companionship, whereas in other situations, it leads to distancing and competition. In this paper we identified two factors that would lead to such a shift from being friends to becoming foes: the stage in goal pursuit, and one's zero-sum belief.

The results of five studies provided consistent support for the hypothesized dynamics. Through two longitudinal studies in academic goal-pursuit context (Studies 1a and 1b), we found that students treated others pursuing the same academic goal as friends when they were at the early-to-mid-point of the semester, but gradually pushed them away as they reached the end-point of the pursuit; this shift from friends to foes also differentiated the same-pursuit peers from other types of interpersonal relationships. In Study 2, we directly manipulated the stage in the pursuit, and found that people indeed drew others in the same pursuit closer and spent more time sharing tips with them when they believed that they were in the initial stage of the pursuit, but conversely became more distant from these same-pursuit peers and spent less time sharing tips when they reached the advanced stage of the pursuit.

In Studies 3 and 4, we incorporated people's zero-sum belief into the examination, and found that the hypothesized pattern only existed among those who held

strong zero-sum belief – for those who believed that others' gains would lead to their loses, they became more distant and shared lower quality information to others when they reached the advanced stage of goal pursuit. Such changes in perceived closeness and information sharing behaviors were due to people's different focuses in different stages of goal pursuit, as directly captured in Study 4. When people first began to pursue the goal, they seek companionship from others to confirm that the goal was indeed attainable, but once they have made substantial progress and goal attainability was no longer a concern, they became competitive against others in the pursuit and seek to reach the goal sooner.

Lastly, through a large-scale qualitative dataset collected from the Weight Watchers (Study 5), we again found supportive evidence that members in the Weight Watchers program treated others in the same program as friends and were more willing to share weight-loss tips when they were in the early stage of the pursuit, but conversely treated others in the program as competition and were reluctant to share information when they were getting close to their goal weight.

IMPLICATIONS FOR SELF-REGULATION THEORIES

Central to our theorizing is the unique role that "same-pursuit peers" (i.e., others who are pursuing the same goal and are in the same stage of pursuit) play in consumers' goal pursuit processes. We found that consumers manage this relationship differently (gradually shifting from friends to foes) as they make more progress in the pursuit. These findings have important implications for the research on interpersonal relationships in

self-regulation processes (e.g., Fitzsimons and Finkel 2010). Prior research in this domain has focused primarily on how people treat significant and close others in their existing social network (Shah 2003; Uchino 2004; Fitzsimons and Fishbach 2010); a limited number of papers that examined the impact of same-pursuit peers centered around the automatic processes (Aarts, Gollwitzer, and Hassin 2004; McCulloch, Fitzsimons, Chua, and Albarracín 2011) rather than one's active, strategic management of the relationship – how one actually perceives and interacts with same-pursuit peers. Our research suggests that the same-pursuit peers indeed play a unique role in goal pursuit processes, comparing to other types of social relationships (i.e., significant others, or similar others who are pursuing different goals, as shown in Studies 1a and 1b), such that "being in the same boat" enhances one's perceived attainability of the goal early on, but could also conversely induce a sense of competition at latter stages of the pursuit.

Our work also adds to the literature of interpersonal similarity by showing that, in addition to sharing the same social status, attitudes and values, surname and appearances (Cohen and Zhou 1991; Ruef, Aldrich, and Carter 2003; Keasey and Keasey 1971; Guéguen, Pichot, and Dreff 2005), "working on the same goal" constitutes another powerful dimension of perceived similarity (even among strangers, as demonstrated in Studies 3 and 4). Indeed, recent research has shown that motivation could serve as a dimension of similarity for people's categorization and knowledge exchange. For instance, the work on interpersonal regulatory fit proposes that people tend to accept advices from instrumental others who has the same motivation orientation as them (e.g., Righetti, Finkenauer, and Rusbult 2011). In addition, the literature on goal-oriented

management of interpersonal relationships showed that others' instrumentality to one's pursuit of an important goal could constitute a dimension for categorization of one's social network (Fitzsimons and Shah 2009). Our theory adds to these recent findings and shows that being motivated by the same goal greatly affects one's perceived closeness with the person, and consequently one's interaction and information sharing behaviors; the examination of such dynamics (i.e., when would one treat same-pursuit peers friendly versus competitively) thus further adds to the dialogue between the fields of motivation and perceived similarity in the social domain.

The present work also has specific relevance for the research in the dynamics of self-regulation processes (Fishbach, Zhang, and Koo 2009; Koo and Fishbach 2008) and the findings that people have different concerns as they accumulate more progress in goal pursuit (Huang and Zhang 2011; Huang, Zhang, and Broniarczyk 2012). Specifically, our findings expand the prior research of the motivational dynamics into the social domain, and propose that in addition to being motivated by different types of feedback and mental representations as separate individuals (Huang and Zhang 2011; Huang, Zhang, and Broniarczyk 2012), people also interact differently with others who are pursuing the same end-point, as they move from one stage to another stage in the goal pursuit process. In addition, we identified people's chronic zero-sum belief as a determinant of such shift of closeness in joint goal pursuit processes (Studies 3 and 4). These findings of the dynamics in the social domain are just as important as the self-regulatory dynamics at the individual level, because it contributes to the understanding of whether and when people interact with same-pursuit peers in a collaborative manner, how their commitment to

goal-oriented social gatherings evolves during the course of pursuit, as well as the changes in their information sharing behaviors, as validated in our Weight Watchers data in Study 5.

FOLLOW-UP STUDY AND FUTURE RESEARCH

To further examine the proposed mechanisms, we have several ideas for the follow-up study. First of all, we can measure people's sabotaging behaviors (i.e., whether they share misleading information with others who are pursuing the same goal) as a proxy for their perceived competitiveness. Secondly, we can directly manipulate people's perceived similarity with others pursuing the same goal, to investigate if an increased similarity with same-pursuit peers would intensify the hypothesized pattern from being friends in the early stage to becoming foes in the advanced stage. Lastly, we can directly influence people's zero-sum belief by enhancing the communal feelings in joint goal-pursuit processes. For instance, by creating a shared identity (Tajfel and Turner 1986; Fishbach, Henderson, and Koo 2011) with others who are pursuing the same goal (e.g., we are all "yoggies"), people may become less likely to view joint goal pursuit as a competition when they approach the end point of the pursuit.

Another interesting aspect left unexplored in the present research is the motivational consequences of the shift in closeness and interaction with same-pursuit peers. In Studies 2 and 4, we found that as people reach the advanced stage of goal pursuit, they tend to view same-pursuit peers as "foes" and become reluctant to share information to help others in their pursuits. Such desire to do better and "win" the alleged

competition could lead to sabotaging behaviors when opportunities arise (e.g., one can share misleading nutrition tips to make others regress on their dieting goal). How, then, would this affect one's own goal pursuit? Specifically, when one sabotages others' pursuit and thus alleviates the potential threat of social comparison (Festinger 1954; Tesser 1988; Blanton 2001; Buunk and Gibbons 2007), does that reduce one's own drive to continue working on the goal, or conversely enhance one's motivation in the pursuit? In addition, is there any boundary situations, such that people remain friendly to others who share a diverse set of similarities with them (e.g., a classmate who is taking the same class and also pursuing the same dieting goal), but choose to compete against and sabotage others who share only one dimension of goal-related similarity with them (e.g., a Weight Watchers member who is pursuing the same dieting goal)? Future research should address these important questions.

IMPLICATIONS FOR MARKETING PRACTITIONERS

The present research has important implications for marketers who aim to enhance consumers' involvement in joint goal pursuit processes. There are more and more goal pursuit programs that encourage consumers to leverage the power of like-minded others to facilitate the attainment of a challenging goal, such as Weight Watchers, AA, and many quit-smoking programs. Our findings suggest that as consumers make more progress in their own goal pursuit, they may find the relationship with same-pursuit peers hostile than facilitative, and be intimidated by the pressure of having to compete against other members in the program. The pressure of competition may lead to

withdrawal from the program, and eventually failure in one's goal attainment. Therefore, it may be instrumental for joint goal-pursuit programs to keep the attainability of the goal somewhat uncertain until one actually succeeds, so that consumers would stay in the group for a longer period of time, and continue interacting with other members in a positive manner to seek companionship.

Furthermore, the present research also sheds important light on how marketers can better motivate consumers to share goal-related information with each other. It is not news that word-of-mouth serves as a free and powerful advertisement for marketers. For instance, Phelps, Lewis, and Mobilio (2004) have found that among all passed-along emails, 45.5% consist of information and helpful tips, and as high as 20% of the emails talk about companies or products in positive ways. Similarly, it has been shown that the volume of WOM has great explanatory power for consumption-related outcomes, such as box office revenue in the movie industry (Liu, 2006). Therefore, by strategically managing how consumers perceive and interact with others who are working on the same goal, marketers can effectively facilitate voluntary sharing of goal-related information (e.g., new dieting products and exercise programs) through emails, discussion forums, and social network sites.

CONCLUSION

In conclusion, our research examines the dynamics in consumer motivation, specifically, how the determinants of consumer motivation change from the initial stage to the advanced stage of goal pursuit. We found that when people first begin to pursue a goal and the attainability of the goal is a concern, they are motivated by a fast speed of progressing, tend to exaggerate the progress they have made so far, and seek companionship from others who are pursuing the same goal, to enhance the belief that the goal is indeed attainable. However, once they reach the advanced stage of the pursuit and the attainability of the goal is relatively secured, they switch to focus on the remaining discrepancy and seek to reduce this gap in a timely manner; therefore, in this advanced stage of the pursuit they are conversely motivated by a slow speed of progressing, tend to downplay the progress they have made to exaggerate the remaining discrepancy that still needs to be completed, and such intense progress monitoring also leads to competitiveness against others who are pursuing the same goal as them.

These findings are important to researchers as well as marketing practitioners because it suggests that the same factor that motivates consumers in early stages of the pursuit could conversely de-motivate them when they are approaching the end point; therefore, the assumption that all factors function in the same way throughout a course of goal pursuit is not only invalid but can also lead to failure in goal attainment.

FIGURES

FIGURE 1: VOLUNTEER FREQUENCY AS A FUNCTION OF PROGRESS AND PERCEIVED VELOCITY (STUDY 1, SECTION 1)

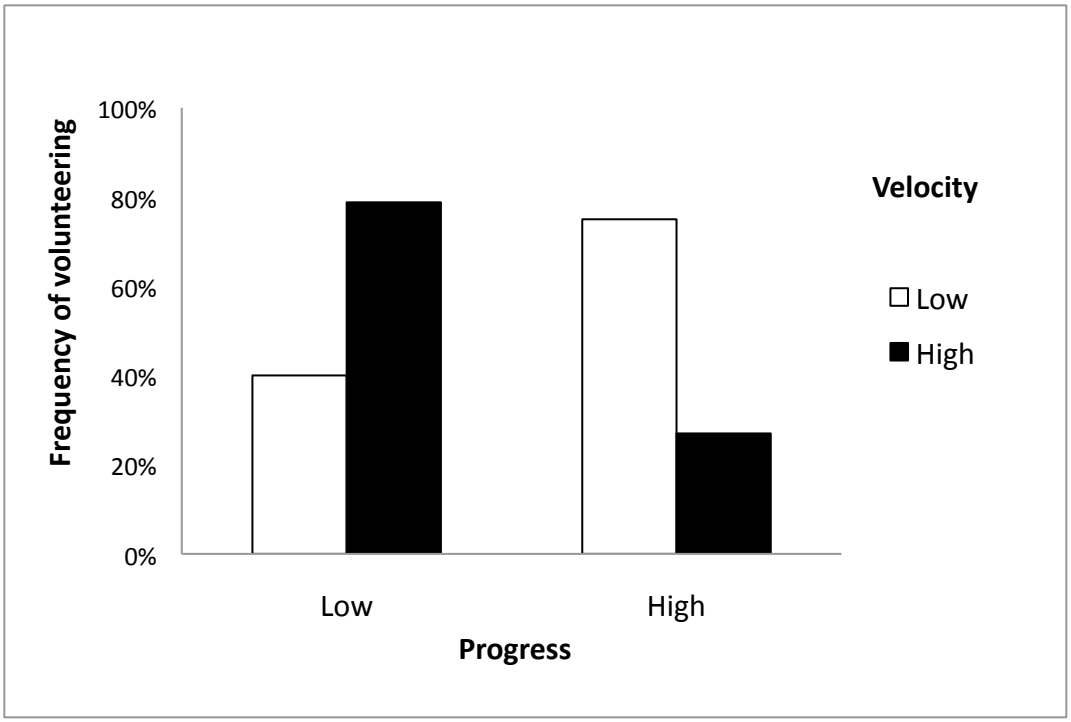


FIGURE 2: VOLUNTEER HOURS AS A FUNCTION OF PROGRESS AND PERCEIVED VELOCITY (STUDY 1, SECTION 1)

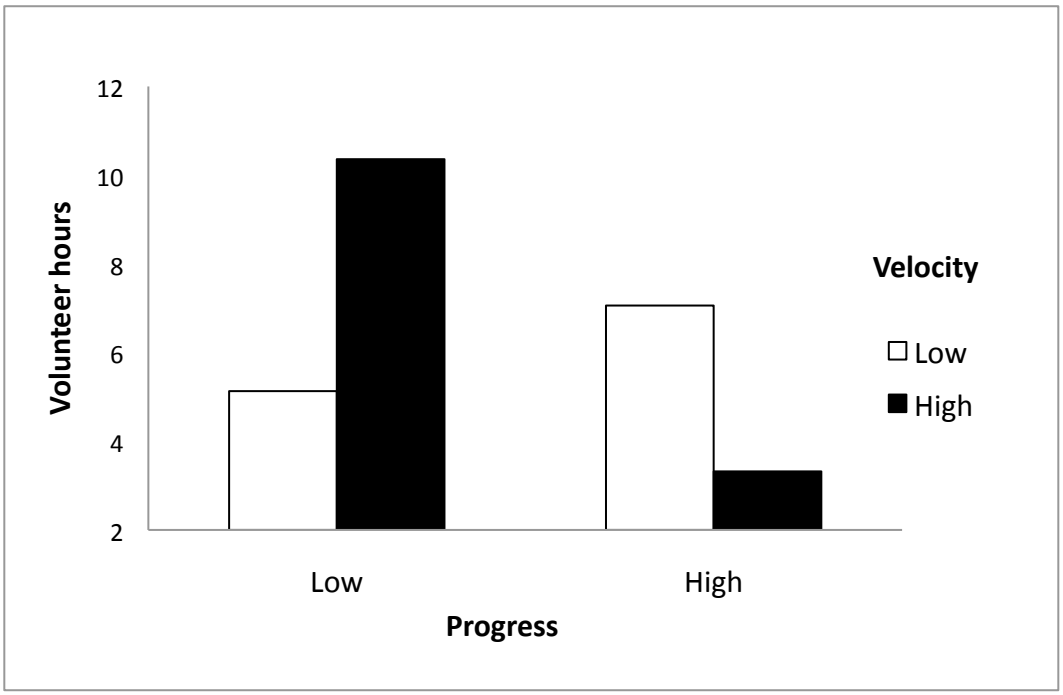


FIGURE 3: WAIT TIME AS A FUNCTION OF PROGRESS AND PERCEIVED VELOCITY (STUDY 2, SECTION 1)

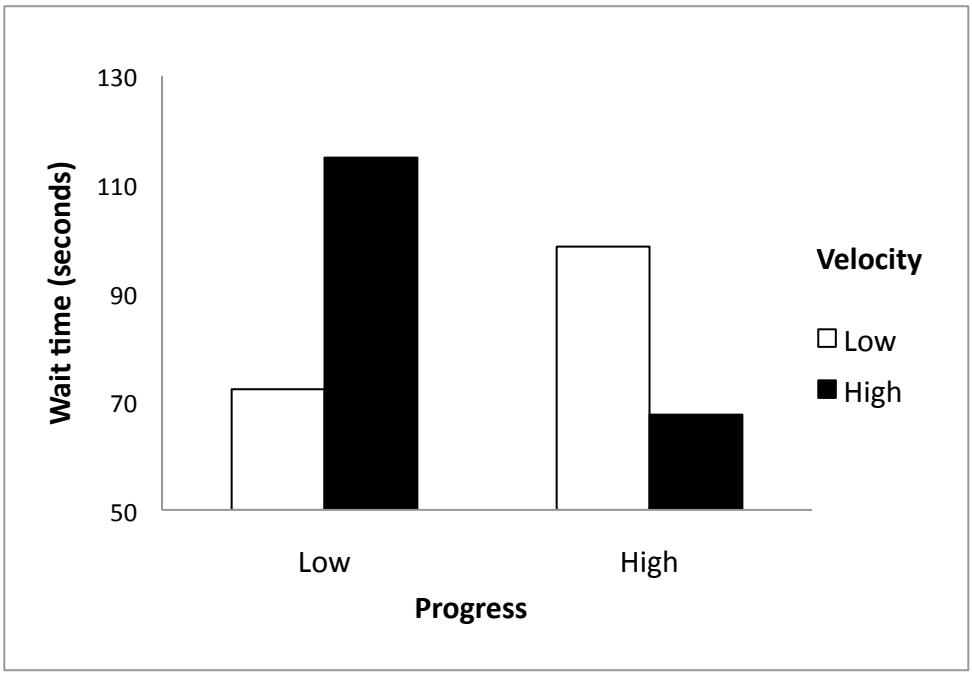


FIGURE 4: MODERATED MEDIATION MODEL OF THE INFLUENCE OF CONCERN OF "CAN I GET THERE?" ON WAITING TIME (STUDY 2, SECTION 1)

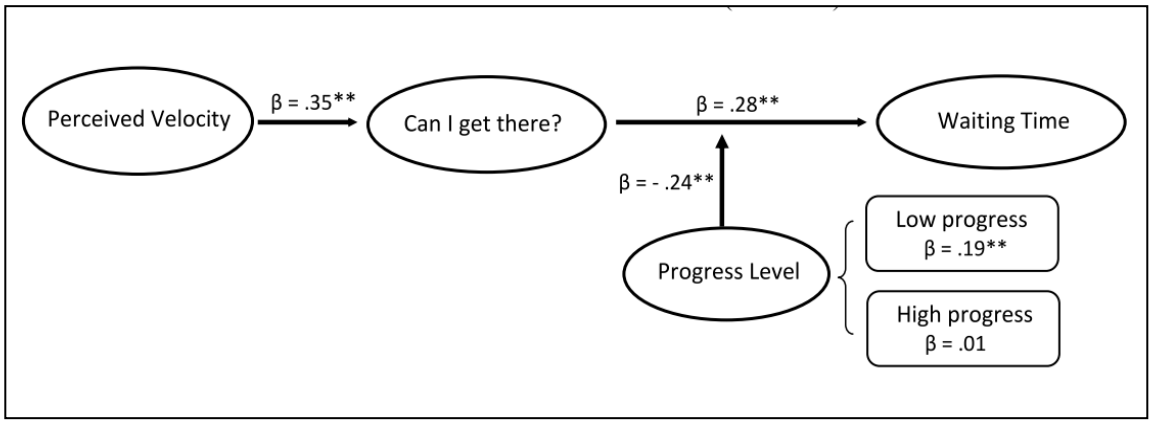


FIGURE 5: MODERATED MEDIATION MODEL OF THE INFLUENCE OF CONCERN OF "WHEN WILL I GET THERE?" ON WAITING TIME (STUDY 2, SECTION 1)

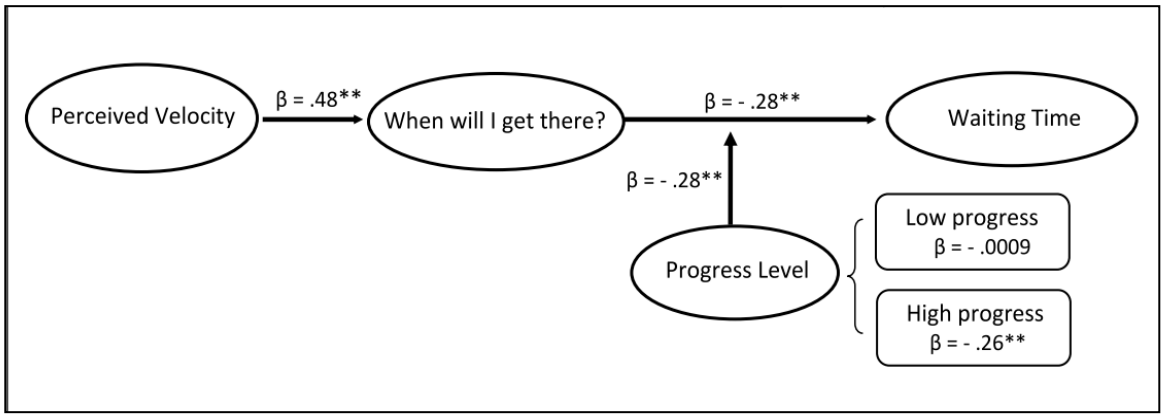


FIGURE 6: AVERAGE TIME SPENT ON DIFFICULT QUESTIONS AS A FUNCTION OF PROGRESS, PERCEIVED VELOCITY, AND TASK FRAMING (STUDY 3, SECTION 1)

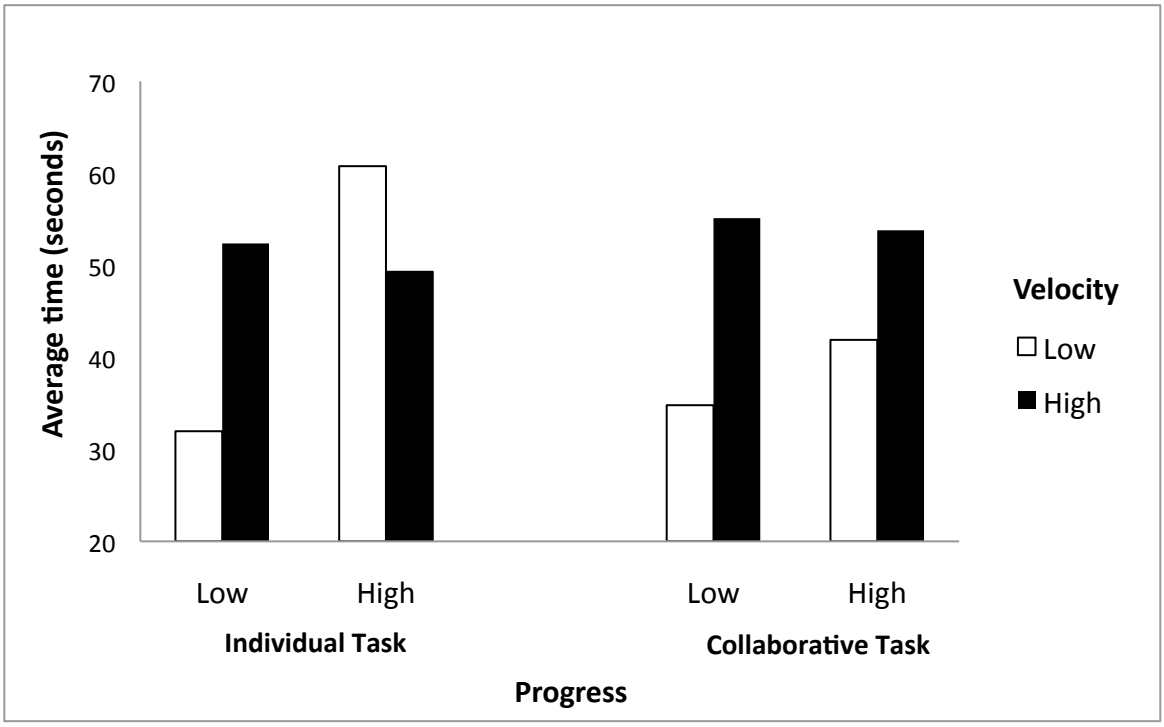


FIGURE 7: TIME SPENT ON MEMORIZING WINE LABELS AS A FUNCTION OF PERCEIVED VELOCITY AND CONFIRMATION (STUDY 4, SECTION 1)

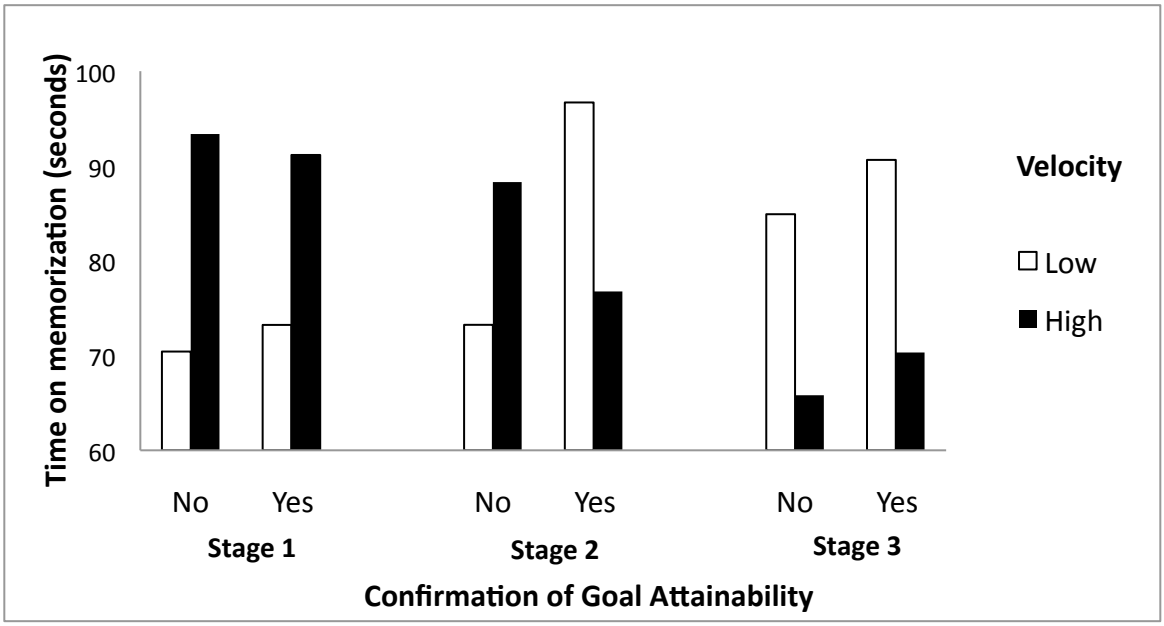
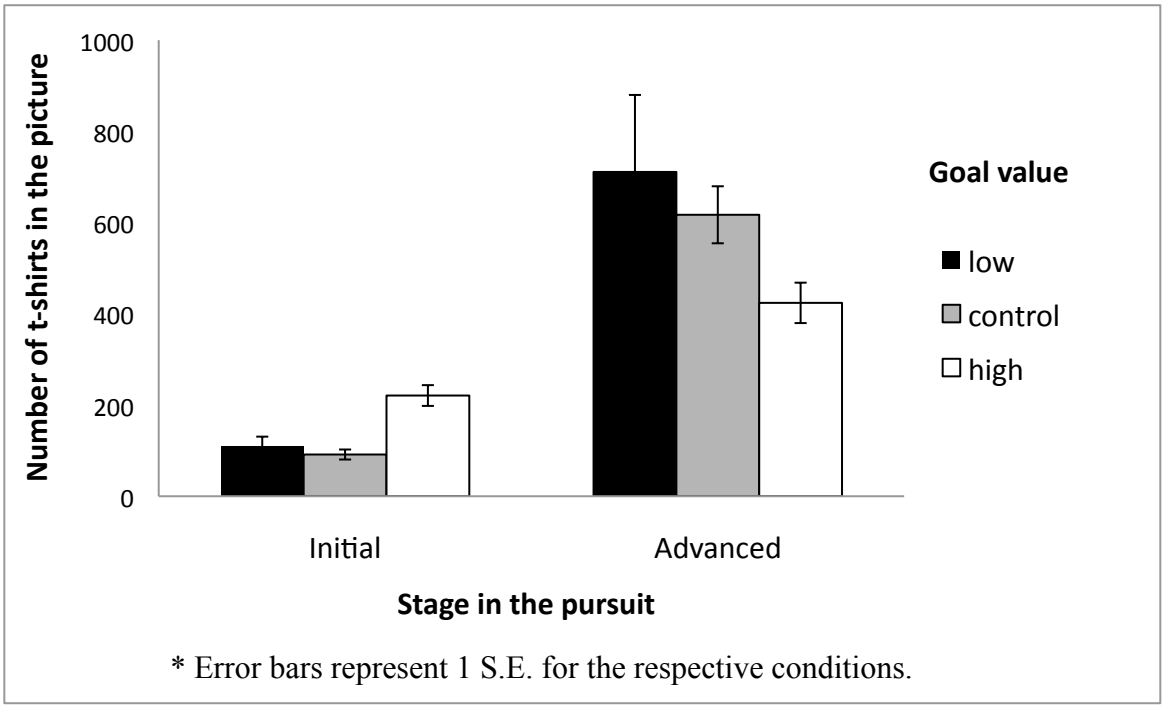


FIGURE 8: NUMBER OF DONATED T-SHIRTS AS A FUNCTION OF STAGE IN THE PURSUIT AND GOAL VALUE (STUDY 1, SECTION 2)



* Error bars represent 1 S.E. for the respective conditions.

FIGURE 9: MODERATED MEDIATION MODEL OF THE INFLUENCE OF MENTAL REPRESENTATION OF PROGRESS LEVEL ON T-SHIRT DONATION (STUDY 1, SECTION 2)

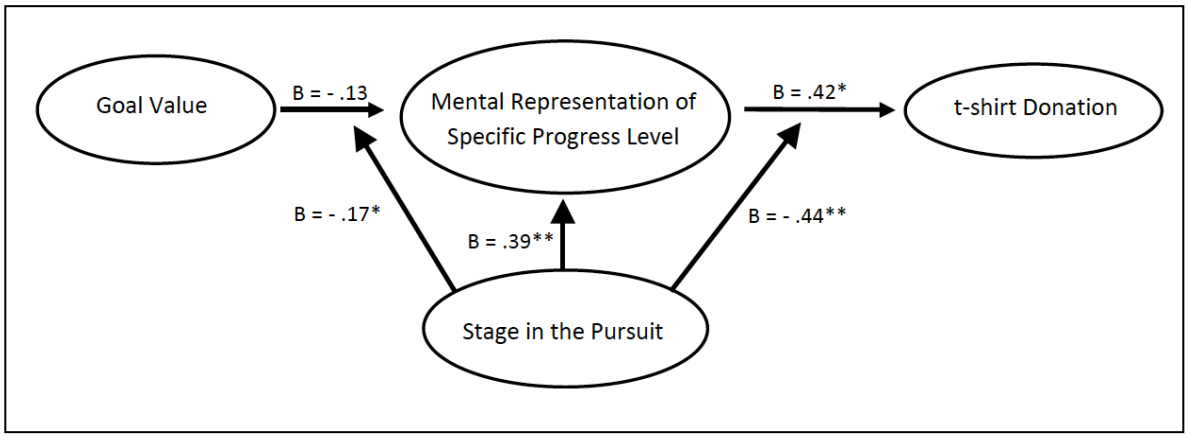
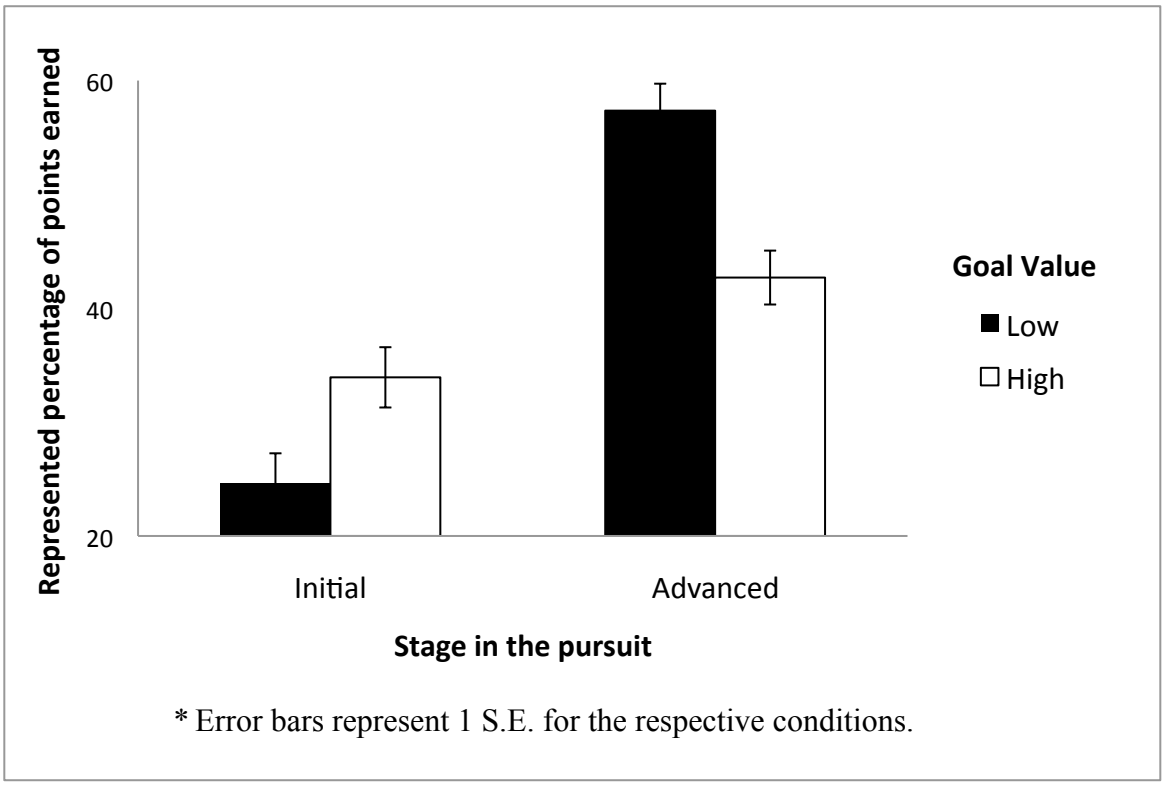


FIGURE 10: REPRESENTED PROGRESS AS A FUNCTION OF STAGE IN THE PURSUIT AND GOAL VALUE (STUDY 2, SECTION 2)



* Error bars represent 1 S.E. for the respective conditions.

FIGURE 11: MODERATED MEDIATION MODEL OF THE INFLUENCE OF MENTAL REPRESENTATION OF PROGRESS LEVEL ON CHANGE OF EFFORT (STUDY 2, SECTION 2)

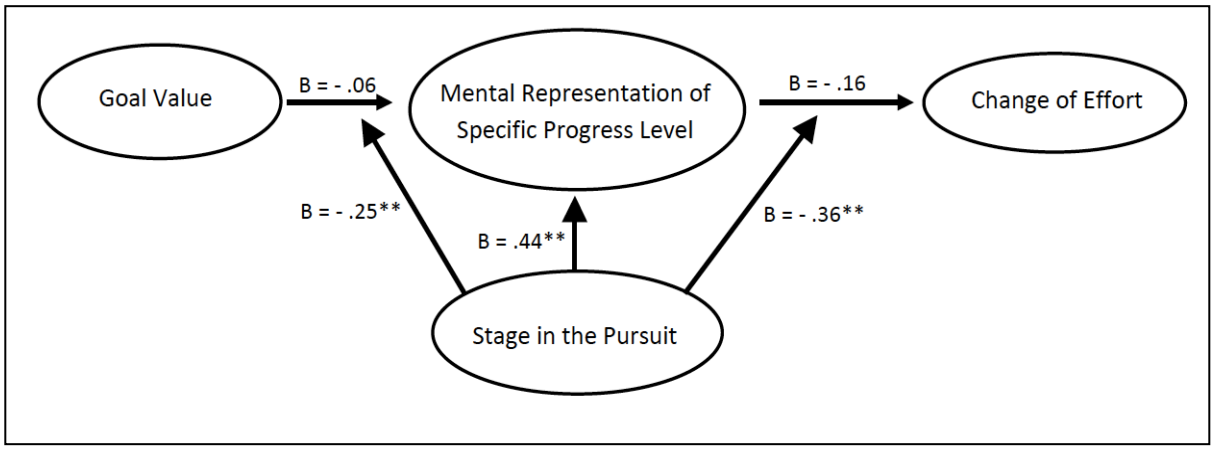
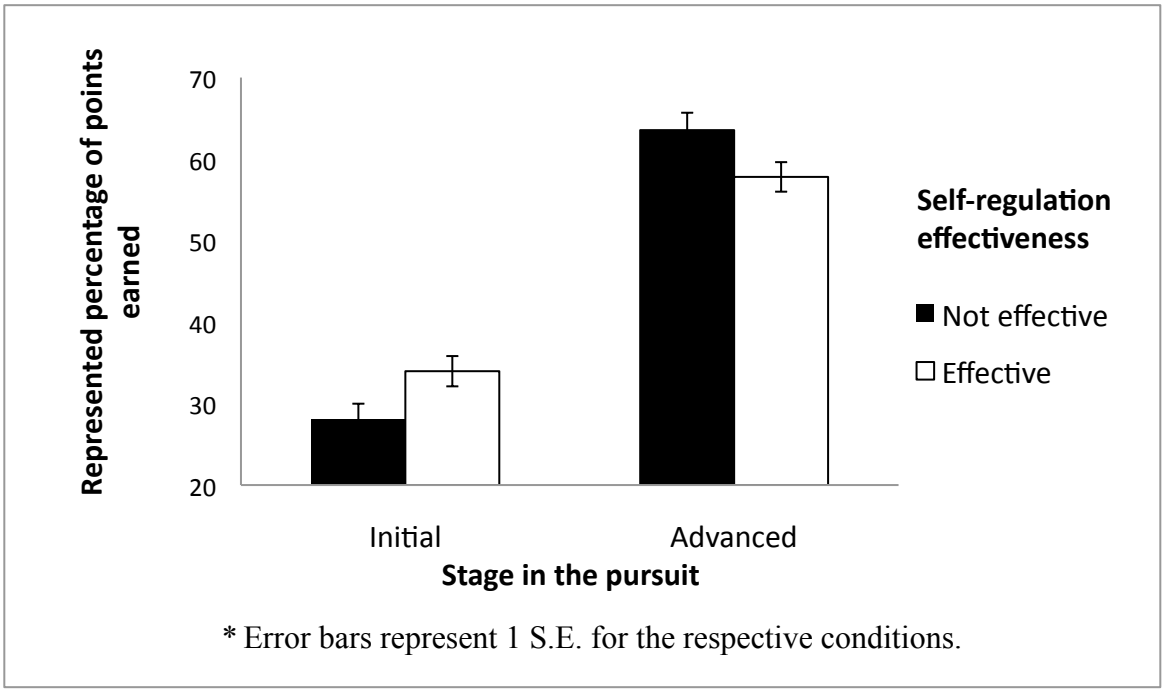


FIGURE 12: REPRESENTED PROGRESS AS A FUNCTION OF STAGE IN THE PURSUIT AND SELF-REGULATION EFFECTIVENESS (STUDY 3, SECTION 2)



* Error bars represent 1 S.E. for the respective conditions.

FIGURE 13: MODERATED MEDIATION MODEL OF THE INFLUENCE OF MENTAL REPRESENTATION OF PROGRESS LEVEL ON EFFORT INVESTMENT (STUDY 3, SECTION 2)

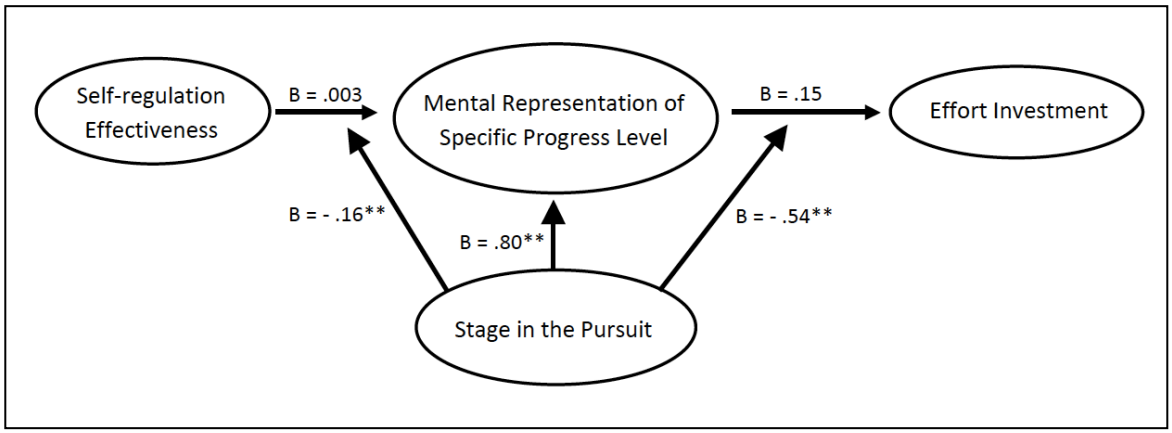
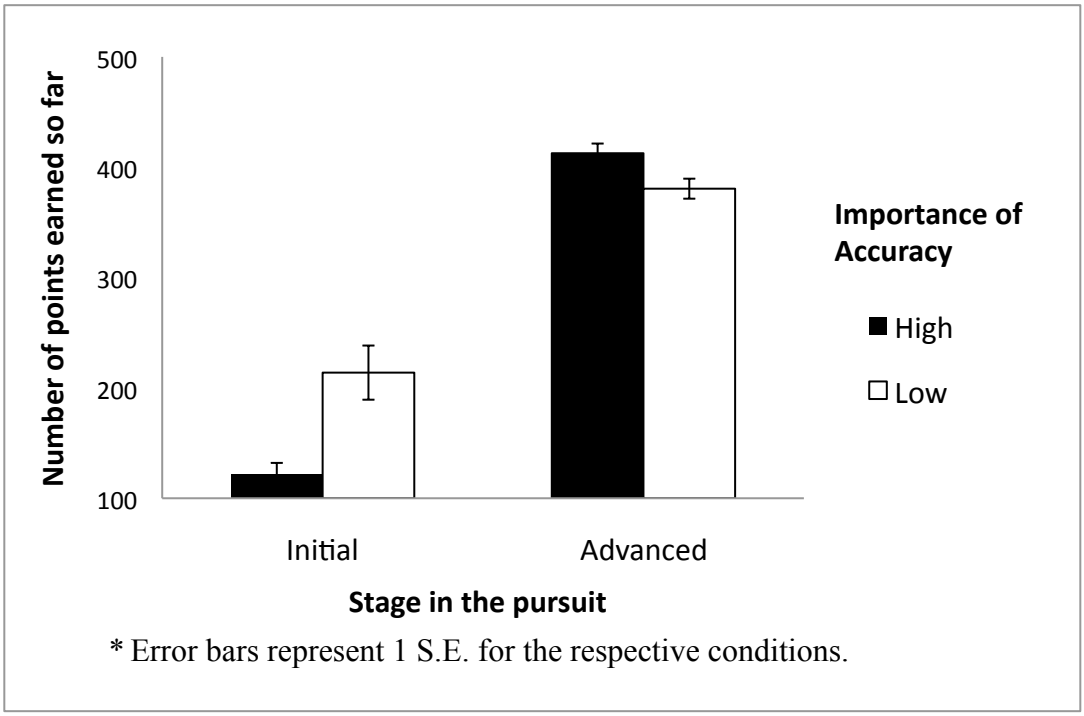


FIGURE 14: NUMBER OF POINTS EARNED SO FAR AS A FUNCTION OF STAGE IN THE PURSUIT AND IMPORTANCE OF ACCURACY (STUDY 4, SECTION 2)



* Error bars represent 1 S.E. for the respective conditions.

FIGURE 15: MODERATED MEDIATION MODEL OF THE INFLUENCE OF MENTAL REPRESENTATION OF PROGRESS LEVEL ON EFFORT INVESTMENT (STUDY 4, SECTION 2)

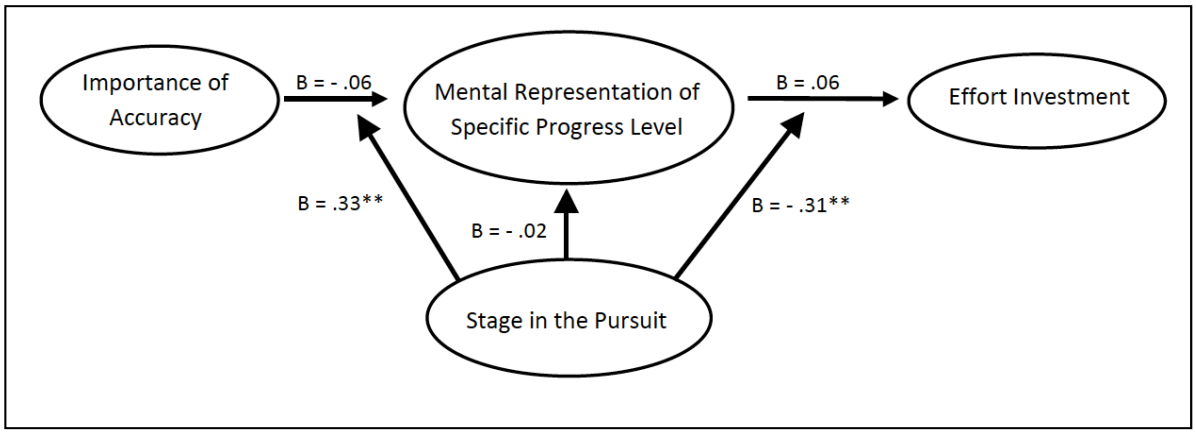


FIGURE 16: PERCEIVED CLOSENESS AS A FUNCTION OF STAGE IN THE PURSUIT AND INTERPERSONAL RELATIONSHIP (STUDY 1A, SECTION 3)

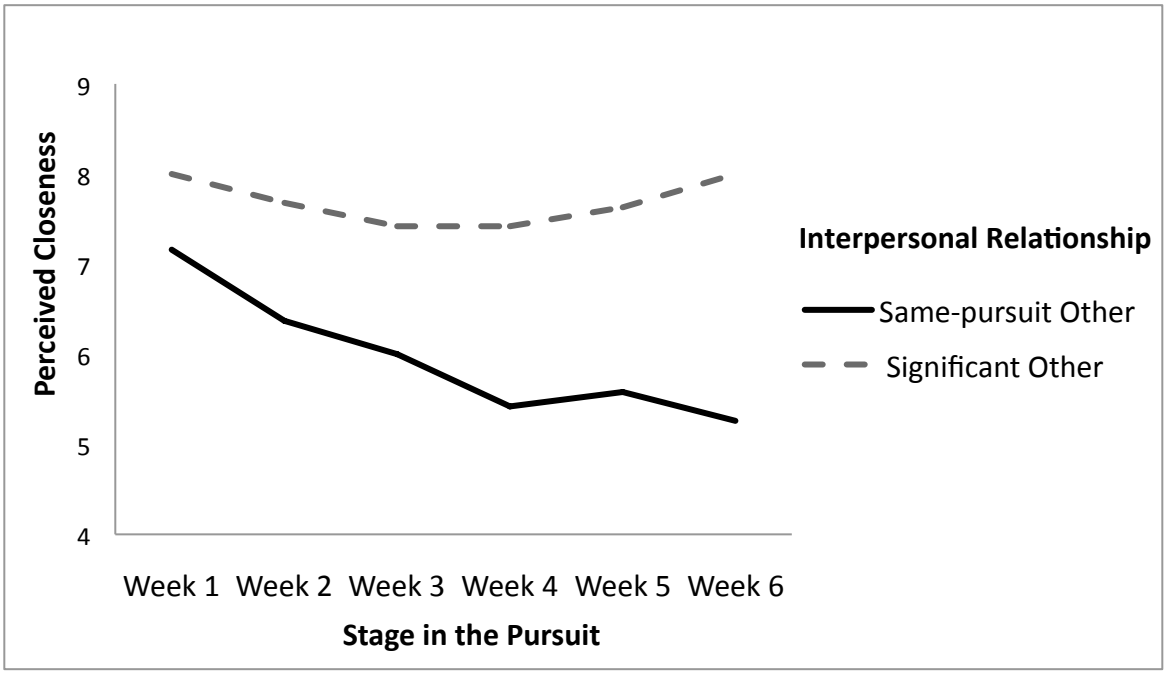


FIGURE 17: PERCEIVED CLOSENESS AS A FUNCTION OF STAGE IN THE PURSUIT AND INTERPERSONAL RELATIONSHIP (STUDY 1B, SECTION 3)

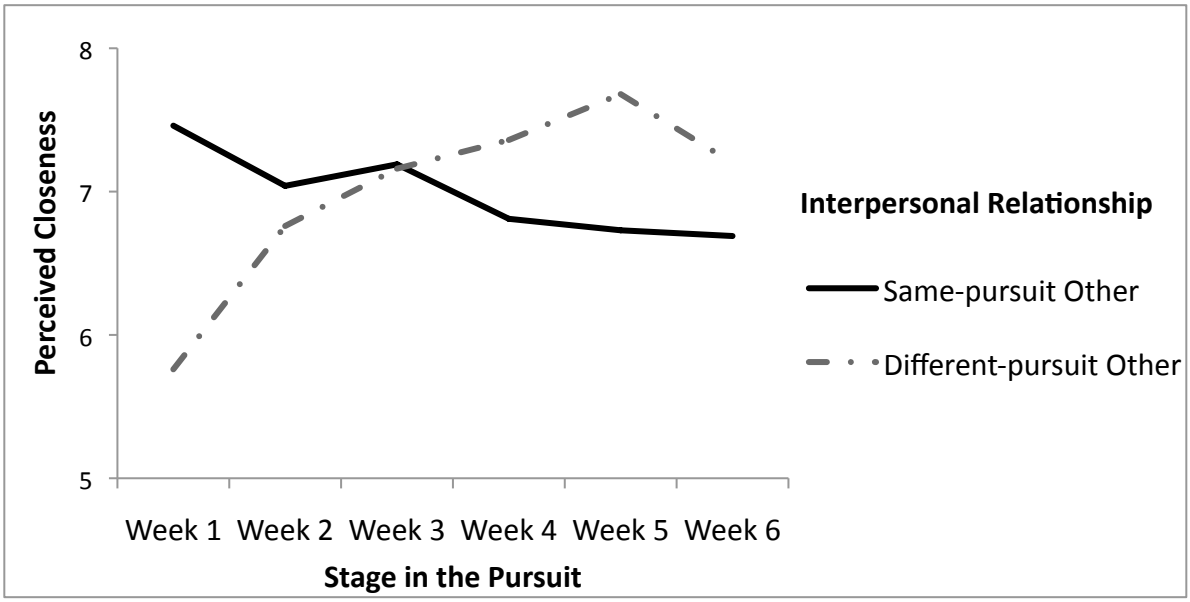


FIGURE 18: PERCEIVED CLOSENESS DIFFERENCE SCORE AS A FUNCTION OF STAGE IN THE PURSUIT AND FRIEND'S PURSUIT (STUDY 2, SECTION 3)

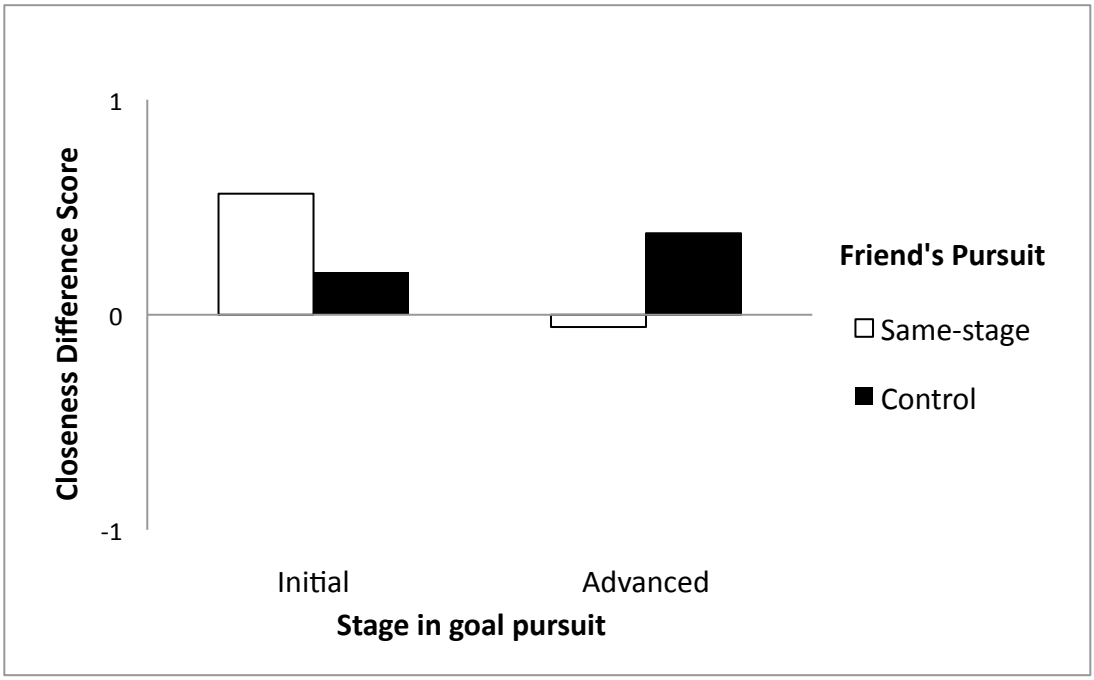


FIGURE 19: TIME SPENT ON SHARING TIPS AS A FUNCTION OF STAGE IN THE PURSUIT AND FRIEND'S PURSUIT (STUDY 2, SECTION 3)

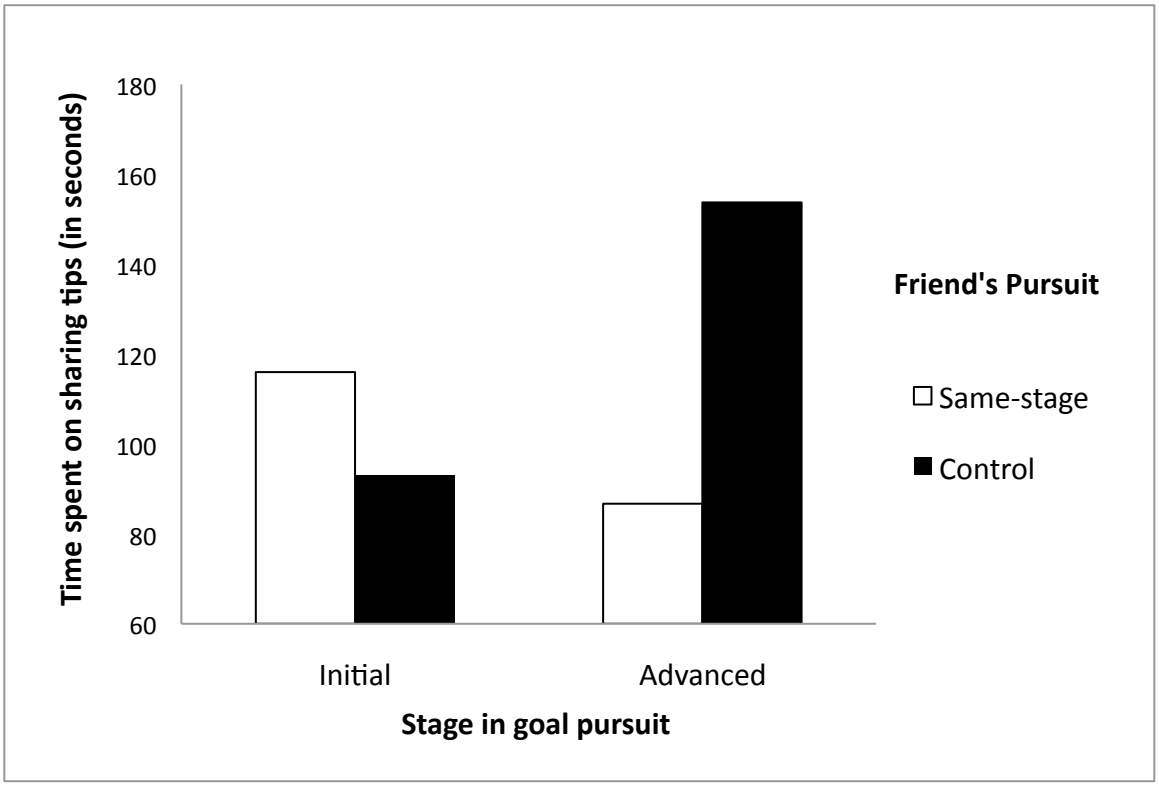


FIGURE 20: LENGTH OF TIPS AS A FUNCTION OF STAGE IN THE PURSUIT AND FRIEND'S PURSUIT (STUDY 2, SECTION 3)

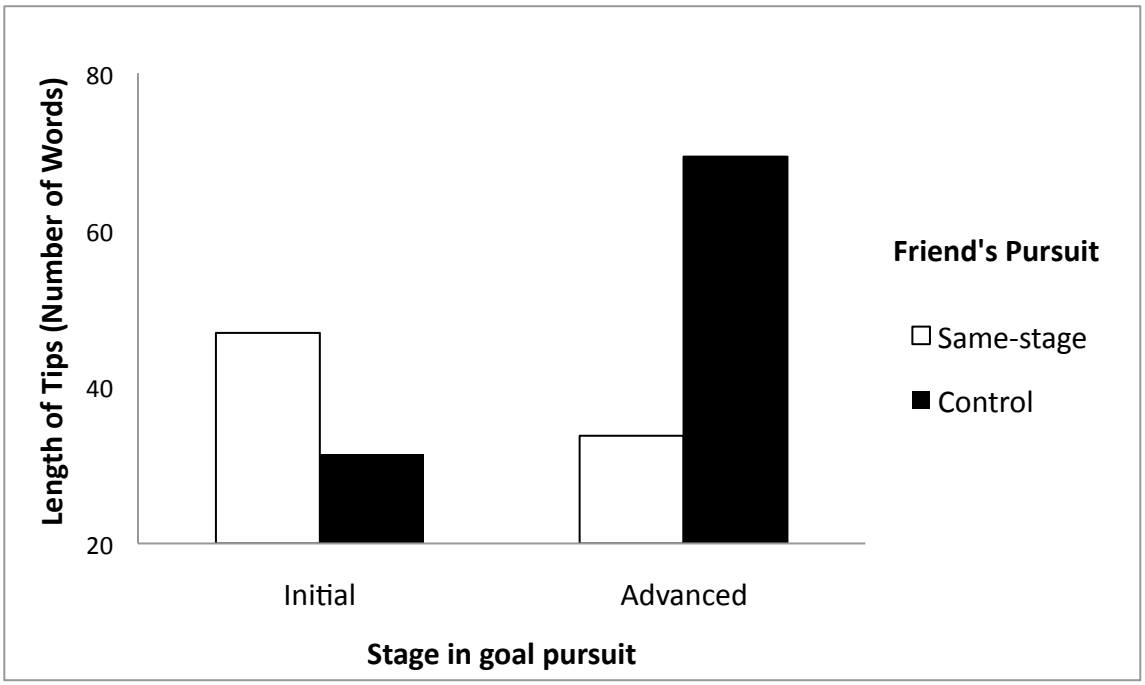


FIGURE 21: PERCEIVED CLOSENESS DIFFERENCE SCORE AS A FUNCTION OF STAGE IN THE PURSUIT AND ZERO-SUM BELIEF (STUDY 3, SECTION 3)

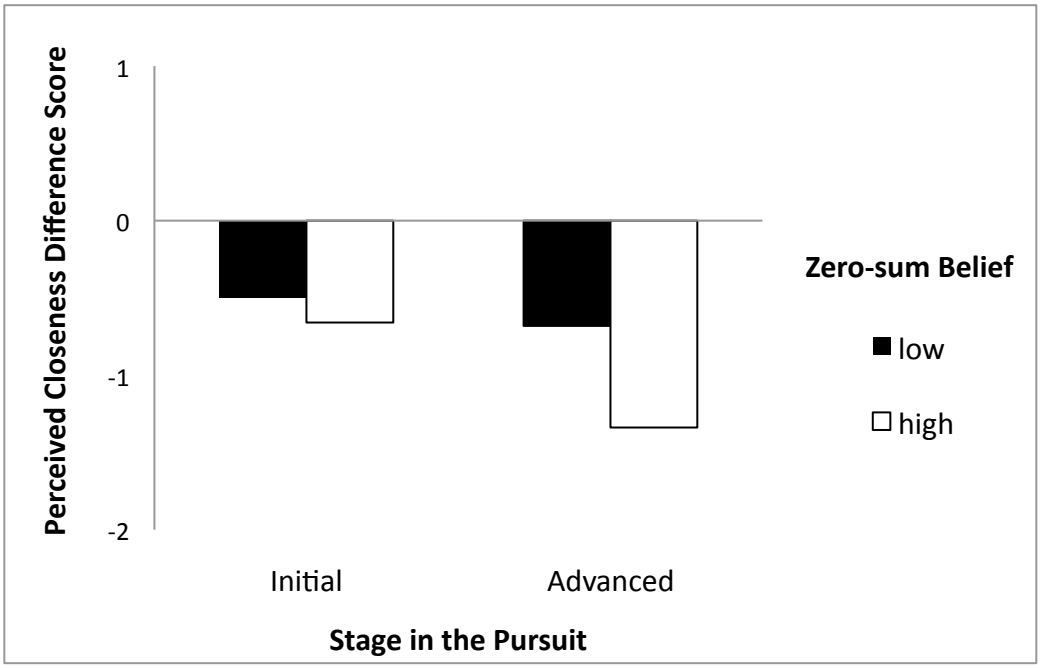
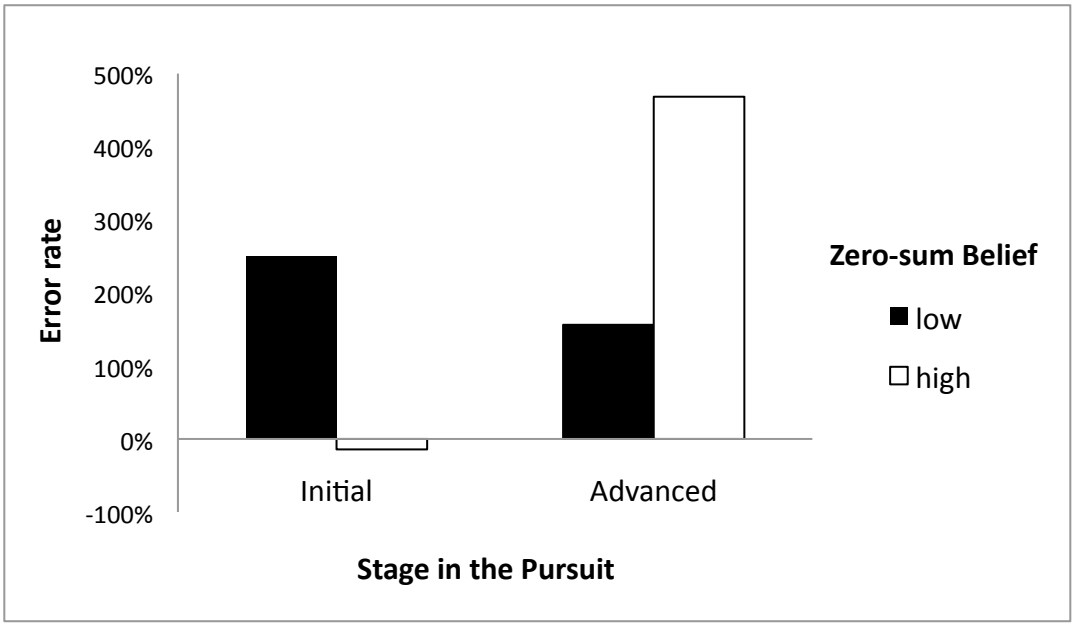


FIGURE 22: ERROR RATE AS A FUNCTION OF STAGE IN THE PURSUIT AND ZERO-SUM BELIEF (STUDY 4, SECTION 3)



APPENDICES

APPENDIX A: INFORMANTS' PROFILE TABLE (STUDY 5, SECTION 3)

Pseudonym	Age	Marital Status	Education	Occupation	Weight Watchers Status
Abby	58	Married	High School	Day care operator	Regular member
Amy	36	Single	Bachelors	Graduate student	Regular member
Angela	25	Married	Masters	Graduate student	Regular member
Anna	53	Married	Some college	Secretary	Regular member
Ava	64	Married	High School	Bookkeeper	Regular member
Barbara	35	Married	Bachelors	Nurse	Regular member
Betty	53	Married	Doctorate	Psychotherapist	Regular member
Brenda	44	Married	Bachelors	Volunteer coordinator	Regular member
Carol	51	Single	Bachelors	Enterpreneur	Regular member
Claudia	30	Married	Masters	High school teacher	Regular member
Cynthia	40	Divorced	Bachelors	Consultant	Regular member
Debra	53	Single	Some college	Technician	Regular member
Donna	32	Married	Some college	Banker	Regular member
Doris	44	Married	Bachelors	Nurse	Regular member
Elizabeth	23	Single	Some college	Training specialist	Regular member
Ethel	54	Married	Bachelors	Girl Scouts coordinator	Regular member
Helen	47	Divorced	Masters	Research tech	Regular member
Irene	25	Single	Bachelors	Cafeteria manager	Regular member
Jane	52	Married	Bachelors	Office manager	Regular member
Janet	28	Single	Bachelors	State investigator	Regular member
Jennifer	45	Single	Bachelors	Administrative assistant	Regular member
Jessica	60	Married	High School	State employee	Regular member
Joyce	38	Engaged	Masters	Recruitment director	Regular member
Judith	30	Single	Masters	Graduate student	Regular member
Julie	46	Married	Some college	Sales associate	Regular member
Karen	26	Partnership	Masters	Research assistant	Regular member
Kathleen	56	Single	Masters	Executive director	Regular member
Kelly	50	Married	Some college	Store manager	Regular member
Kimberly	46	Married	Masters	High school teacher	Lifetime member
Leslie	60	Divorced	Masters	Secretary	Lifetime member
Linda	50	Married	Bachelors	Secretary	Lifetime member
Lorraine	49	Married	Bachelors	High school teacher	Lifetime member

Mary	50	Married	Bachelors	Coordinator	Lifetime member
Melanie	37	Married	Bachelors	Paraeducator	Lifetime member
Michelle	53	Married	Bachelors	Social worker	Lifetime member
Nancy	50	Married	Bachelors	Nurse	Lifetime member
Natalie	33	Married	Bachelors	Adminstrative support	Lifetime member
Patricia	44	Married	Bachelors	Archeologist	Lifetime member
Rebecca	50	Married	Bachelors	State employee	Lifetime member
Ruby	33	Married	Doctorate	Assistant professor	Lifetime member
Ruth	24	Single	Masters	Graduate student	Lifetime member
Samantah	59	Widowed	Some college	Social worker	Lifetime member
Sandra	52	Married	Masters	Pubicisit	Lifetime member
Sara	46	Married	Some college	Unemployed	Lifetime member
Sharon	31	Single	Masters	Research chemist	Lifetime member
Shirley	59	Married	Some college	Secretary	Lifetime member
Susan	30	Single	Masters	High school teacher	Lifetime member
Vicki	35	Married	Bachelors	Stay-at-home mom	Group leader
Virginia	52	Married	Associates	State employee	Group leader
Wanda	45	Married	Masters	Manager	Group leader
Whitney	49	Married	Associates	Aging specialist	Group leader

APPENDIX B: CODING SCHEME (STUDY 5, SECTION 3)

Theme	Description
Indicators of Companionship:	
• Community of the like-minded others	Perception that Weight Watchers members are similar to one another, united by the commonality of weight loss challenges and experiences.
• Goal pursuit as a collective project	Perception that individual weight loss goals are subsumed into a group goal.
• Increased perception of goal attainability	Perception that the presence of the group ensures attainability of individual weight loss goals.
• Companionship seeking	Frequency of contact with fellow Weight Watchers and group leaders by regular attendance of group meetings on a weekly or more than a weekly basis.
• Motivation to contribute to a collective goal	Desire to score a weekly weight loss not to let the group down.
• Reliance on the group for emotional support	Mutual seeking and sharing of verbal encouragement and supportive communications from fellow Weight Watchers, especially in times of dietary challenges/setbacks.
• Reliance on the group for informational support	Mutual seeking and sharing of tips, advice, and diet-related information with fellow Weight Watchers at the group meetings.
Indicators of Comparison and Competition:	
• Increased sense of individual distinction	Perception that having lost weight, an individual member has become different from other Weight Watchers.
• Goal pursuit as an individual project	Desire to lose weight independently, with limited or no participation in Weight Watchers group meetings.
• Absence of doubt in goal attainability	Perception that an individual member can attain the weight loss goal without reliance on the group.
• Companionship aversion	Reducing the contact with fellow Weight Watchers by infrequent attendance or by skipping group meetings.
• Distancing from a collective goal	Perception that everyone has to pursue their own weight loss goals.
• Limited/no need for emotional support	Tendency to non-disclosure of temporary setbacks and limited or no seeking/sharing of verbal encouragement and supportive communications.
• Information withholding/limited sharing	Tendency to not seek or share diet-related information with fellow Weight Watchers.

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